

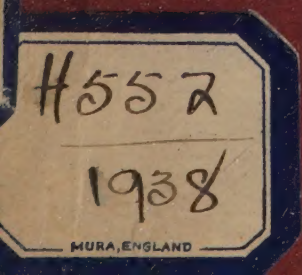
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**PREVENTION AND TREATMENT
OF TUBERCULOSIS IN THE
ADMINISTRATIVE COUNTY OF LANCASTER.**

Report of the Central Tuberculosis Officer
of the Lancashire County Council
for the Year 1937.

*F. Taylor & Co. (Blackpool) Ltd., Back Regent Road, Blackpool.
1938.*





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PREVENTION AND TREATMENT
OF TUBERCULOSIS IN THE

ADMINISTRATIVE COUNTY OF LANCASTER

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Report of the Local Tuberculosis Officer
to the Lancaster County Council
for the Year 1937.

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PREVENTION AND TREATMENT OF TUBERCULOSIS IN THE ADMINISTRATIVE COUNTY OF LANCASTER.

Report of the Central Tuberculosis Officer
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for the Year 1937.

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COUNTY TUBERCULOSIS COMMITTEE

(1938).

The Chairman of the County Council :

*†Sir William Hodgson, J.P.

The Vice-Chairman of the County Council :

†P. Macdonald, Esq., J.P.

Chairman of Committee :

*Canon A. Kershaw, M.A.

Vice-Chairman :

*E. Clegg, Esq.

COUNTY ALDERMEN—

*E. Boothman, Esq., J.P.

H. F. Jeffery, Esq., M.B., Ch.B.,
J.P.

*C. J. Trimble, Esq., C.B., C.M.G.,
L.R.C.P., D.P.H., J.P., D.L.

COUNTY COUNCILLORS—

*L. Allen, Esq., J.P.

*H. Bright, Esq.

J. H. Dawson, Esq.

F. H. Dodd, Esq.

M. F. Hendron, Esq., M.B., B.Ch.,
B.A.O.

T. E. Jesson, Esq., J.P.

*J. Kershaw, Esq.

W. J. Lucas, Esq., J.P., F.I.O.B.

*P. F. Mannix, Esq., M.D., M.Ch.,
B.A.O., J.P.

W. T. Miller, Esq., J.P.

A. Ogden, Esq.

R. S. Robson, Esq., J.P.

*Sir Thomas Tomlinson, J.P.

*E. Tye, Esq.

* Members of the Sanatorium and Hospital Sub-Committee.

† County Aldermen.

MEDICAL AND NURSING STAFF OF THE TUBERCULOSIS DEPARTMENT, Oct. 1938.

Central Tuberculosis Officer—G. LISSANT COX, M.A., M.D. (Camb.).

STAFF OF THE DISPENSARY AREAS AND COUNTY SANATORIA AND HOSPITALS.

Area No. 1. (Population 255,424).

(Lancaster, Morecambe and Heysham, Garstang Rural (part), Preston Rural, Walton-le-Dale, Chorley, and Horwich districts).

Consultant Tuberculosis Officer and Visiting Physician, Lancaster Pulmonary Hospital (36 beds)—G. H. LEIGH, M.D., Ch.B., D.P.H. (Manch.).

Assistant Tuberculosis Officer—F. C. S. BRADBURY, M.D., B.Ch. (Belf.), B.Hy., D.P.H. (Durh.).

Area No. 2. (Population 321,996).

(Clitheroe, Colne, Nelson, Burnley Rural, Blackburn Rural, Accrington, Darwen, Haslingden, Rawtenstall, and Bacup districts).

Consultant Tuberculosis Officer and Visiting Medical Superintendent, Withnell Pulmonary Hospital (52 beds)—B. MACPHEE, M.B., Ch.B. (Glas.), D.P.H. (Camb.).

Assistant Tuberculosis Officers—S. C. ADAM, M.B., Ch.B., (Glas.), D.P.H. (Lond.); and D. O. HUGHES, M.D., Ch.B., D.P.H. (Liverp.) (2 days per week).

Area No. 3. (Population 379,773).

(Ramsbottom, Littleborough, Radcliffe, Heywood, Crompton, Prestwich, Middleton, Chadderton, Failsworth, Ashton-under-Lyne, Mossley and Denton districts).

Consultant Tuberculosis Officer and Visiting Medical Superintendent, Wolstenholme Pulmonary Hospital (55 beds)—G. FLETCHER, M.A., M.D. (Glas.), M.R.C.P. (Lond.), D.P.H. (Camb.).

Assistant Tuberculosis Officers—J. L. ARMOUR, M.B., Ch.B. (Liverp.), M.R.C.S. (Eng.), L.R.C.P. (Lond.), D.P.H. (Manch.); and W. FETTES, M.B., Ch.B., D.P.H. (Aberd.).

Area No. 4. (Population 369,354).

(Westhoughton, Atherton, Farnworth, Leigh, Swinton and Pendlebury, Eccles, and Stretford districts).

Consultant Tuberculosis Officer and Visiting Medical Superintendent, Peel Hall Pulmonary Hospital (57 beds)—G. JESSEL, M.A., M.D. (Oxon.), D.P.H. (Manch.), A.R.P.S.

Assistant Tuberculosis Officers—A. B. JAMIESON, M.B., Ch.B., (Edin.); and H. J. VILLIERS, L.R.C.P.I., L.R.C.S.I.

Area No. 5. (Population 296,531).

(West Lancashire Rural, Crosby, Newton-in-Makerfield, Whiston Rural, Warrington Rural, and Widnes districts).

Consultant Tuberculosis Officer and Visiting Medical Superintendent, Rufford Pulmonary Hospital (52 beds)—C. W. LAIRD, B.A., M.D. (Dub.), D.P.H. (Liverp.).

Assistant Tuberculosis Officers—C. BERRY, L.R.C.P., L.R.C.S. (Edin.), L.R.F.P.S. (Glas.), D.P.H. (R.C.P.S.I.); and J. N. WHYTE, M.D., B.Ch., B.A.O., D.P.H. (Belf.).

MEDICAL STAFF—contd.

High Carley Sanatorium (130 beds), Oubas House Children's Sanatorium (21 beds), and Furness Dispensary Area (Population 38,034).

(Dalton-in-Furness, Grange-over-Sands, Ulverston, and Ulverston Rural districts).

Medical Superintendent and Consultant Tuberculosis Officer—G. LEGGAT, M.B., Ch.B. D.P.H. (Aberd.).

Assistant Medical Superintendent—C. V. STEVENSON, M.B., B.Ch. D.P.H. (Belf.).

Junior Assistant Medical Officer—G. A. WILTHEW, B.Sc., M.B., B.S. (Durh.).

Elswick Sanatorium (70 beds) and Fylde Dispensary Area (Population 88,808).

(Fleetwood, Thornton Cleveleys, Lytham St. Annes, Fylde Rural, Garstang Rural (part), and Kirkham districts).

Medical Superintendent and Consultant Tuberculosis Officer—G. B. CHARNOCK, L.R.C.P., L.R.C.S. (Edin.), L.R.F.P.S. (Glas.), D.P.H. (Liverp.).

Assistant Tuberculosis Officer—D. O. HUGHES, M.D., Ch.B., D.P.H. (Liverp.) (3½ days per week).

Wrightington Hospital (226 beds) and Wigan County Dispensary Area (Population 109,280).

(Ashton-in-Makerfield, Hindley, Ince-in-Makerfield, and Wigan Rural districts).

Medical Superintendent and Consultant Tuberculosis Officer—E. H. A. PASK, M.D. (Lond.), M.R.C.S. (Eng.), L.R.C.P. (Lond.).

Assistant Tuberculosis Officer—E. H. W. DEANE, M.B., B.S. (Melbourne).

Assistant Medical Superintendent—J. DOBSON, M.R.C.S. (Eng.), L.R.C.P. (Lond.).

Junior Assistant Medical Officer—C. D. COE, M.B., Ch.B., (Manch.).

Chadderton Pulmonary Hospital (44 beds).

Visiting Medical Superintendent and a Regional Medical Officer of the Ministry of Health—E. T. HOLDEN, M.B., Ch.B. (Birm.), M.R.C.S. (Eng.), L.R.C.P., D.P.H. (Lond.).

Heath Charnock Pulmonary Hospital (39 beds).

Visiting Medical Superintendent and Medical Officer to the Chorley Joint Hospital Board—J. RIGBY, M.B., Ch.B., D.P.H. (Manch.).

Lancaster, Withnell, Wolstenholme, Peel Hall and Rufford Pulmonary Hospitals.

The Consultant Tuberculosis Officers of Dispensary Areas Nos. 1, 2, 3, 4 and 5, respectively, are the visiting Medical Superintendents of these Hospitals, as mentioned in the foregoing list of staff.

CONSULTING SURGICAL STAFF.

T. P. McMURRAY, M.Ch. F.R.C.S. (Edin.), and
 HARRY PLATT, M.D. (Manch.), M.S. (Lond.), F.R.C.S. (Eng.),
Visiting Consulting Orthopaedic Surgeons, Wrightington Hospital.

H. H. BYWATER, M.D. (Manch.), D.Ch.O. (Liverp.), F.R.C.S. (Edin.),
Visiting Consulting Ophthalmic Surgeon, Wrightington Hospital.

C. A. WELLS, M.B., Ch.B., (Liverp.), F.R.C.S. (Eng.), L.R.C.P. (Lond.),
Visiting Consulting Urological Surgeon, Wrightington Hospital.

H. MORRISTON DAVIES, M.D., M.Ch. (Camb.), F.R.C.S. (Eng.).
*Visiting Consulting Chest Surgeon, Elswick and High Carley Sanatoria
 and Peel Hall Pulmonary Hospital.*

F. R. EDWARDS, M.B., Ch.B., (Liverp.), F.R.C.S. (Eng.), L.R.C.P. (Lond.),
*Junior Visiting Consulting Chest Surgeon, Elswick and High Carley
 Sanatoria and Peel Hall Pulmonary Hospital.*

J. HALTON, M.B., Ch.B. (Liverp.),
Visiting Anaesthetist, High Carley Sanatorium.

VISITING DENTAL SURGEONS.

<i>High Carley and Oubas House Sanatoria</i>	A. MILLER, L.D.S. (R.C.S., Eng.).
<i>Elswick Sanatorium</i>	R. D. ALLISON, L.R.C.P., L.R.C.S. (Edin.), L.R.F.P.S. (Glas.), L.D.S. (R.C.S., Edin.).
<i>Wrightington Hospital</i>	J. J. WARD, L.D.S. (R.C.S., Eng.).

MATRONS.

High Carley and Oubas House Sanatoria	.....	E. WOOSEY.
Elswick Sanatorium	.....	A. JONES.
Chadderton Pulmonary Hospital	.....	I. FELSTEAD.
Heath Charnock Pulmonary Hospital	.....	H. SINCLAIR.
Lancaster Pulmonary Hospital	.....	A. PATCHETT
Peel Hall Pulmonary Hospital	.....	E. SIMMONS.
Rufford Pulmonary Hospital	.....	S. HOLMES.
Withnell Pulmonary Hospital	.....	D. WILLMAN.
Wolstenholme Pulmonary Hospital	.....	E. G. GLASS.
Wrightington Hospital	.....	E. MOSELEY.

TUBERCULOSIS HEALTH VISITORS.

Area No. 1—*L. Walker, J. Skelcher, *F. D. Abbott, G. M. Hunter.

Area No. 2—*R. Lambert, *M. Duggan, L. F. Norwood, E. Watterson,
*H. M. Alcock, E. H. Scott.

Area No. 3—M. A. Potter, *H. Dewsnap, *I. F. Macdonald, *C. Guilfoy,
*A. Flynn, W. Swift, M. Sherwen.

Area No. 4—M. B. Jones, *H. M. Shakespeare, F. G. Smith, A. Dickinson,
K. Blakemore, *M. Gibson, E. M. Crone.

Area No. 5—E. Walch, *M. J. Wilson, *L. Farquhar, I. M. Corfield,
*M. J. McKeown.

Furness Area—E. A. Duston.

Fylde Area—*A. Tweedy.

Wigan County Area—*E. Walters, M. J. Evans.

*Possesses a health visitor's or sanitary certificate.

SENIOR ADMINISTRATIVE STAFF.

H. F. HUGHES, M.A., F.S.S. (Chief Clerk).

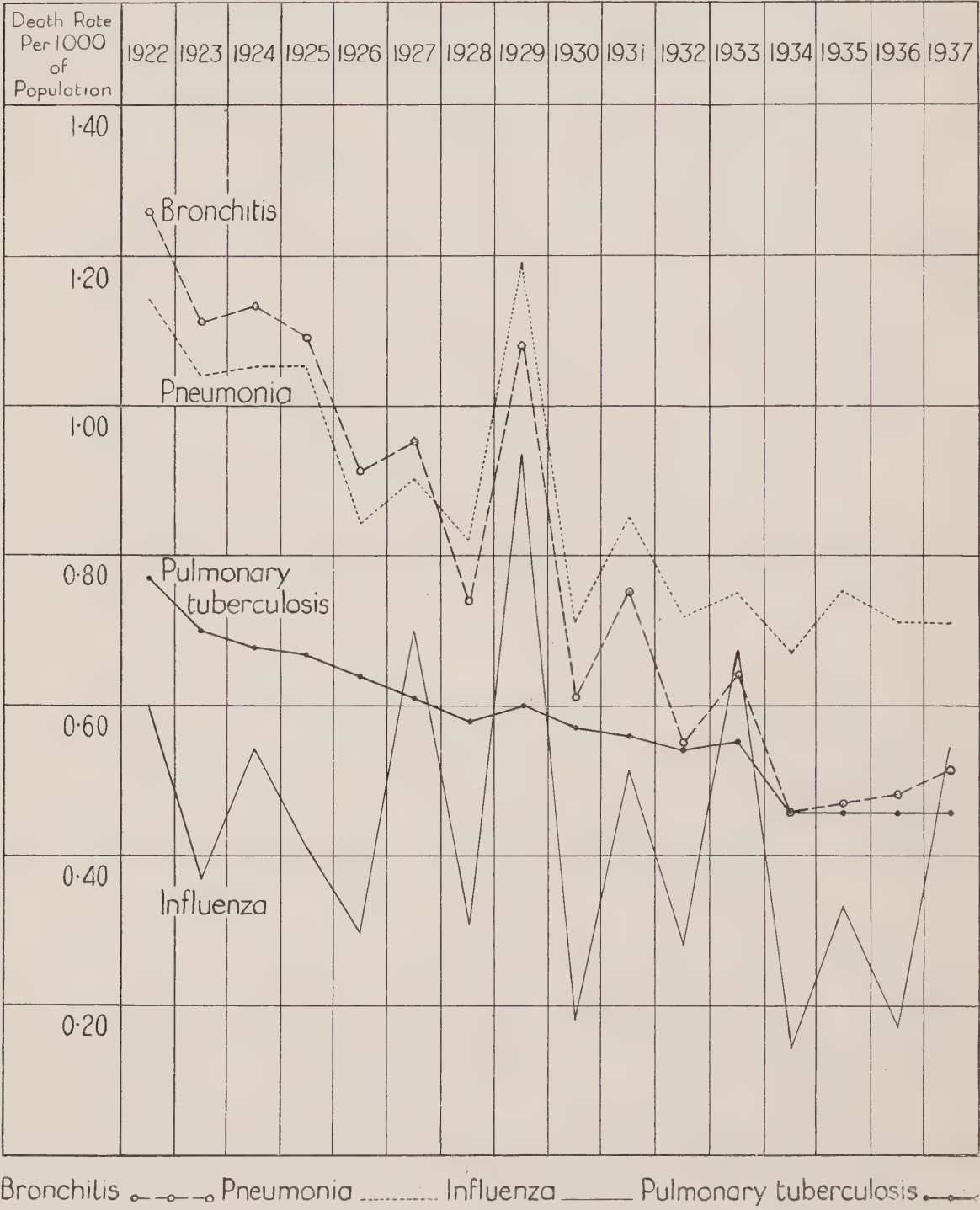
E. W. MANN (Assistant Chief Clerk and Chief Steward).

J. W. JOLLY (Principal Clerk, class 3) ; H. BRADSHAW, I. PARKER, and
E. F. B. HINDLE (Senior Clerks).

For senior dispensary and sanatorium clerical staff, see column (4) of
folding Table A opposite page 54.

ADMINISTRATIVE COUNTY OF LANCASTER.

Chart of the death-rates per 1,000 of the population from (a) Bronchitis, (b) Pneumonia, (c) Influenza, and (d) Pulmonary Tuberculosis for the years 1922-1937.



The chart shows the position of pulmonary tuberculosis among the other principal respiratory diseases, namely, bronchitis, pneumonia, and influenza. Pulmonary tuberculosis shows a fairly even downward trend until the last three years, and simulates, but in an unexaggerated way, the erratic course of bronchitis and pneumonia. The influenza curve is too erratic to associate statistically with tuberculosis.

Experience shows that when influenza has been epidemic, tuberculosis case notifications have increased; the prevalence of influenza appears to retard the fall in the pulmonary tuberculosis death-rate.

REPORT
OF THE
CENTRAL TUBERCULOSIS OFFICER
FOR THE YEAR 1937.

*To the Chairman and Members of the
Lancashire County Council.*

LADIES AND GENTLEMEN,

I have the honour to submit the twenty-fourth annual report on the work of the Tuberculosis Department, and in this introductory portion will give briefly some of the principal features of the work in 1937.

Tuberculosis incidence and mortality.

The death-rate from pulmonary tuberculosis in 1937 (0·46 per 1,000 of the population) is the same as in the previous three years. The chart opposite shows the death-rates from pulmonary tuberculosis in comparison with other respiratory diseases during the years 1922-1937. Between 1924 and 1936 there was a steady decline in the number of new cases of pulmonary tuberculosis reported, but in 1937 there has been an increase of 60 over 1936.

With regard to non-pulmonary tuberculosis, the death-rate of 0·10 per 1,000 of the population remains the same as in 1935 and 1936 ; it is exactly half of what it was in 1925 and less than one-third of the rate in 1914. The number of new cases of non-pulmonary tuberculosis reported during the year shows an increase of 29 over the previous year.

There is, however, every indication from the records to the end of September, that for 1938 the tuberculosis death-rate will show a decline to a record low figure.

The following are the death-rates in 1937 from tuberculosis (all forms) per 1,000 of the population in the Administrative County, in counties with a population in the region of 1,000,000, and in England and Wales :—Lancashire, 0·57 ; Durham, 0·73 ; Essex, 0·52 ; Kent, 0·64 ; Middlesex, 0·58 ; Surrey, 0·52 ; West Riding of Yorkshire, 0·56 ; and England and Wales, 0·69.

The tuberculosis scheme.

The Lancashire County Council scheme covers the whole of the Administrative County (population 1,859,200, area 1,038,130 acres). A special feature of the scheme, and of fundamental importance, is the method whereby the dispensary work is combined with the hospital or sanatorium work. The County has been divided into (i) five large dispensary areas or units, average population 324,000, each with a small sanatorium-hospital ; and (ii) three small dispensary areas surrounding the three largest institutions, the area and the institution together forming a unit. By this organisation the whole County is served by team work ; each tuberculosis officer has beds like any private consultant, and the divorce so common between the dispensary unit and the institutional unit does not occur.

Each area is in the charge of a consultant tuberculosis officer with medical assistants, nursing staff, and clerical staff. Ordinary symptomatic treatment is not undertaken at the dispensaries, the tuberculosis officers being concerned with the diagnosis and special treatment of patients, and measures for the prevention of the disease. The County Council own or lease 25 tuberculosis dispensaries situated in convenient centres in the County, and own or rent accommodation at sanatoria and hospitals for 981 beds, of which 735 are at eleven County sanatoria and hospitals. Treatment is, and always has been, provided free of cost. The number of cases of tuberculosis on the dispensary registers on the 1st January, 1938, was 7,367.

The net expenditure on tuberculosis services for 1937-38 was £199,908, equal to a rate of 4·90d. in the £. Towards the expenditure there is now an amount included in the General Exchequer Grant receivable under the Local Government Act, 1929 ; it is not specifically allocated to the tuberculosis service, but is a general credit to the County Fund. Previous to the passing of the Act the Government made an annual grant based upon 50 per cent. of the net approved expenditure ; for 1928-29 their grant amounted to £74,105.

Duration of illness of adult pulmonary patients.

On many occasions I have stressed the importance of early diagnosis in the campaign against tuberculosis as the next most effective measure to prevention. There are two factors involved : (a) The detection by the patient himself of symptoms sufficient to influence him to seek medical advice ; and (b) the recognition of possible or actual tuberculosis by the medical attendant and reference by him to the tuberculosis officer for diagnosis and advice as to treatment.

This year, I have carried out further research to ascertain if there has been any improvement, comparing 1920 with 1937, in (a) and (b). The matter is dealt with in Chapter II., pages 5 to 8, of this report.

Briefly, it was found that as between 1920 and 1937 the duration of symptoms from their onset to the date the patient consulted his medical attendant had declined by 61 per cent. to 2·9 months for negative sputum cases and by 48 per cent. to 4·2 months for positive sputum cases. The period the patients were kept under observation by their medical attendants showed similarly a decline of 40 per cent. to 3·2 months for negative sputum cases and 27 per cent. to 3·5 months for positive sputum cases. The reductions are welcome, but there is still much room for further improvement both on the part of the patient and the medical attendant.

Co-operation with medical practitioners, health officials, and other bodies.

The results of the tuberculosis scheme would be very different if the relations with the medical practitioners in the County, together with the medical officers and sanitary inspectors of County district councils had not been of the most cordial and satisfactory character. I take this opportunity to acknowledge such co-operation from these sources. It is most satisfactory that 92 per cent. of new cases (excluding contacts) were sent *before notification* to the tuberculosis officers for an opinion as to diagnosis or treatment.

Co-operation also takes place with the Public Assistance Committee and the Unemployment Assistance Board in the granting of relief to necessitous tuberculous persons and their dependants, and with approved societies on matters relating to insured tuberculous persons.

Special contributions by medical staff.

The following special contributions by members of the medical staff are printed in this report :—

Tuberculosis of the Phalanges, Metacarpal and Metatarsal Bones, by Dr. E. H. A. Pask (pages 9 to 14).

Indications for Major Surgical Treatment in Pulmonary Tuberculosis, by Mr. F. R. Edwards (pages 15 to 17).

Tomography, by Dr. F. C. S. Bradbury (pages 18 to 27).

The Cultural Method in the Diagnosis of Tuberculosis, by Dr. J. Dobson (pages 28 to 31).

Dispensary work.

A table showing the dispensary work done in Lancashire during 1937 compared with all counties in England, and England and Wales is given on page 46.

Interesting comparisons between Lancashire and all counties in England are contained in the undermentioned figures which are calculated per 100 deaths from tuberculosis :—

	All counties Lancashire, in England.	
Total new cases and new contacts diagnosed as suffering from tuberculosis and receiving treatment under the official scheme	166	145
Number of sputum examinations	575	393
Number of x-ray examinations	1,043	464
Number of home visits by tuberculosis health visitors	3,902	2,569
Number of patients on the dispensary registers at the end of the year	693	663
Number of T.B. plus cases on the dispensary registers at the end of the year	262	247
Number of cases remaining undiagnosed at the end of the year	4	26
Number of cases removed from the dispensary registers as recovered	68	52

Thoracic surgery.

Thoracic surgery continues to play an important part in the treatment of pulmonary tuberculosis. Mr. H. Morriston Davies, the visiting consulting chest surgeon, pays periodical visits to the High Carley Sanatorium, the Elswick Sanatorium, and the Peel Hall Pulmonary Hospital. His assistant is Mr. Ronald Edwards, whom we have to congratulate this year on his appointment as Hunterian Professor, Royal College of Surgeons.

There has been a big increase in the amount of surgical work done at the High Carley Sanatorium, and this has necessitated the more frequent visiting of the sanatorium by the consulting surgical staff and an extension of the treatment block.

The results of thoracic surgery performed at High Carley are discussed at some length on pages 101-105, and comprehensive tables and statistics are given.

An interesting survey has been made of 43 cases treated by phrenic nerve interruption at Elswick Sanatorium from 1931 to 1933, and several tables, setting out the present position of these cases, appear on pages 119 and 120.

A special article on "Indications for Major Surgical Treatment in Pulmonary Tuberculosis" has been contributed by Mr. Ronald Edwards, and appears on pages 15-17. In this article Mr. Edwards outlines clearly and concisely the principal features of the various surgical measures, and describes the conditions under which these surgical measures can most satisfactorily be applied.

The following statement shows the number of living patients on the dispensary registers on 31st December, 1937, who had undergone surgical treatment for their chest condition:—Artificial pneumothorax alone, 515; artificial pneumothorax with division of adhesions, 39; phrenicectomy or phrenic crush, 98; phrenicectomy or phrenic crush in association with artificial pneumothorax, 140; thoracoplasty alone, 14; thoracoplasty after artificial pneumothorax, 6; total, 812, representing 18·9 per cent. of the 4,280 pulmonary cases on the registers.

X-ray examinations.

The provision of x-ray plants for the diagnosis and treatment of cases of tuberculosis is as essential as the provision of the stethoscope and thermometer. The use made of x-rays in this County in 1937 is shown by the following figures:—At County dispensaries 11,091 x-ray examinations were made, and 11,033 at County sanatoria and hospitals. The x-ray examinations of dispensary patients represent 1,043 per 100 deaths from tuberculosis.

Education.

Lectures on tuberculosis are given from time to time by the County tuberculosis officers. In February and March, 1937, this educational propaganda was assisted by Dr. Harley Williams, the Medical Commissioner of the National Association for the Prevention of Tuberculosis, who addressed 12 meetings in the Wigan County Dispensary Area and Widnes. The addresses were given to older scholars in the afternoon, and to adults in the evening. The lectures, illustrated by cinematograph films, were well attended and appreciated. Further arrangements have been made for Dr. Harley Williams to give a series of lectures during October, 1938, to older school children and adults in the following

County districts :—Chadderton, Heywood, Radcliffe, Droylsden, Prescott, Skelmersdale, Huyton and Earlestown.

Medical staff.

I beg to record that during 1938 four senior members of the medical staff, Drs. Pask, Jessel, MacPhee and Laird, completed 25 years' service with the County Council. It is a great pleasure to me to acknowledge their able and loyal support throughout this period ; what success has been achieved in the diagnosis and treatment of tuberculosis under the County scheme is due in no small measure to their exceptional abilities and untiring work for the prevention and treatment of tuberculosis.

Air raid precautions.

Members of the medical, nursing, clerical and outdoor staffs at sanatoria, hospitals, dispensaries and the central office wherever possible attended, during the past eighteen months, courses of lectures and demonstrations organised by the Home Office and the Lancashire County Constabulary on air raid precautions. At the time of the international crisis at the end of September, 1938, there existed trained personnel at each institution. The position of each institution in the Government's regional scheme for the treatment of casualties in a National emergency was ascertained ; immediate steps were taken to safeguard the supply of drugs, dressings, food and fuel ; consideration was given to transport arrangements and augmentation of staffs ; and construction or preparation of air raid refuges for patients and staff was put in hand.

I beg to record the immediate and whole-hearted response of all members of the staff in these matters.

Progress and future requirements in the tuberculosis scheme.

Below is a statement of the progress made and the requirements at dispensaries, sanatoria and pulmonary hospitals :—

Huyton Dispensary. The new branch dispensary, 95, Blue Bell Lane, Huyton, was opened on the 18th November, 1937, to meet the needs of the greatly increasing population of Huyton-with-Roby and Whiston. The dispensary also serves the urban district of Prescott.

Ashton-under-Lyne Dispensary. The new chief dispensary in Lees Street will be in full use in November, 1938, replacing the premises in Warrington Street, the accommodation at which had proved insufficient in view of present requirements.

Widnes Dispensary. In November, 1938, the new branch dispensary in Chapel Street will be opened in replacement of the unsatisfactory premises, Brendan House, Widnes Road.

Seaforth Dispensary. In order to replace the existing dispensary in Claremont Road, Seaforth, which is inadequate for present needs, the premises "Ellesmere," Crosby Road North, Waterloo, were purchased on the 30th June, 1938. A scheme for renovating, adapting, and extending the premises is in course of preparation.

Eccles Dispensary. The premises 28 and 30, Gilda Brook Road, Eccles, where the centralised medical work for Area No. 4 is done, are proving too small for the expansion of such work, and removal to more commodious premises will have to be considered.

Middleton Dispensary. This dispensary will shortly be closed on account of the declining number of patients and the provision of the new dispensary at Chadderton, which is convenient of access to the Middleton patients.

Wrightington Hospital. A new schoolroom, including teachers' room and store, was erected by the hospital staff and opened on the 24th May, 1937.

High Carley Sanatorium. The work on the alterations and extensions at this sanatorium (see page 100) was commenced on the 12th July, 1937.

Peel Hall Pulmonary Hospital. During the year, the old outbuildings were altered and adapted to provide a concert hall with dressing room and lavatories adjoining.

Elswick Sanatorium. The treatment block at this sanatorium has been extended to accommodate a laboratory, dispensary, and larger office ; the work was completed in June, 1938.

Visits of medical officers.

I beg to report that the following visitors came to Lancashire to study the County tuberculosis scheme :—

Dr. Haruki, Medical Director of the Tokio Sanatorium, Japan. Visited the Central Office on the 5th January, 1937.

Dr. B. A. Dormer, Medical Superintendent of the Nelspoort Sanatorium, Cape Colony, South Africa. Visited in April, 1937, Central Office ; Eccles, Leigh, and Wigan Dispensaries ; Peel Hall Pulmonary Hospital ; and Wrightington Hospital.

Dr. R. J. Matthews, a Medical Officer of the Welsh Board of Health. Visited in June, 1937, Central Office ; Accrington, Ulverston, and Wigan Dispensaries ; High Carley and Oubas House Sanatoria ; Withnell Pulmonary Hospital ; and Wrightington Hospital.

Dr. J. E. Chapman, a Senior Medical Officer of the Ministry of Health. Visited in November, 1937, Central Office ; Accrington, Chorley, and Wigan Dispensaries ; Withnell Pulmonary Hospital ; and Wrightington Hospital.

Dr. S. H. Paul, Assistant Director of Public Health, Province of Assam. Visited in May, 1938, Central Office ; Accrington Dispensary ; and Withnell Pulmonary Hospital.

Dr. Bruce A. Hunt, Consulting Physician to the Repatriation Commission in Western Australia. Visited in September, 1938, Central Office ; Accrington, Ulverston, and Wigan Dispensaries ; High Carley and Oubas House Sanatoria ; Withnell Pulmonary Hospital ; and Wrightington Hospital.

Dr. Ali Abdel Rahman Soliman and Dr. Ali Azmy, Tuberculosis Officers of the Egyptian Government. Visited in September 1938, Central Office ; Eccles, Ulverston, and Wigan Dispensaries ; High Carley and Oubas House Sanatoria ; Peel Hall Pulmonary Hospital ; and Wrightington Hospital.

Dr. Philip Tsu-Yan Ch'iu, late assistant in the Department of Public Health and Hygiene, Peiping, China. Visited in September, 1938, Central Office ; Chorley, Eccles and Ulverston Dispensaries ; High Carley Sanatorium ; Peel Hall Pulmonary Hospital ; and Wrightington Hospital.

Prevention and treatment of tuberculosis in Wales and Monmouth.

The Minister of Health appointed “ a Committee to enquire into the working of the arrangements for the prevention, treatment, and after-care of tuberculosis in Wales and Monmouth.”

The Committee desired to be “ in possession of first-hand information with regard to some well-established scheme in England serving a population and area comparable with Wales.” They considered “ that the scheme of the Lancashire County Council would probably afford the most useful comparison for the purpose.” On their invitation I attended,

with Mr. Hughes, before the Committee at Cardiff on the 28th April, 1938, and presented a memorandum explaining fully the County scheme for the prevention and treatment of tuberculosis. Numerous questions were put by the Committee, medical officers of health, and representatives of interested bodies concerning the Lancashire experience and our results.

Inter-departmental Committee on Nursing Services.

As a representative of the Joint Tuberculosis Council, I was requested to assist in giving evidence before this Committee which was appointed to consider "the arrangements at present in operation with regard to the recruitment, training, registration, and terms and conditions of service of persons engaged in nursing the sick." A memorandum of evidence was prepared which contained the following chapters :—(i) The nursing problem in relation to tuberculosis institutions ; (ii) the shortage of nurses ; (iii) the staffing of tuberculosis institutions ; (iv) the training of nurses ; (v) the employment of tuberculous ex-patients as nurses ; and (vi) suggestions for improved remuneration and conditions of service for nurses in tuberculosis institutions. Much of the experience gained in the administration of the County sanatoria and hospitals was included in the memorandum. Along with two other representatives of the Joint Tuberculosis Council I appeared before the Inter-departmental Committee on the 14th June, 1938. Their report is awaited with much interest, and it is expected that many improvements in the service conditions of nurses will be recommended.

I have again to thank my medical colleagues, and the nursing and clerical staffs for continued help. I have had valuable administrative assistance from my chief clerk, Mr. H. F. Hughes, M.A., F.S.S., including much work in preparing this report, and have, in addition, to thank the Public Health Department for their co-operation.

I am,

Your obedient Servant,

G. LISSANT COX,

County Offices, Preston.
14th October, 1938.

Central Tuberculosis Officer.

1. TUBERCULOSIS INCIDENCE AND MORTALITY IN 1937.

The principal features of tuberculosis incidence and mortality in 1937 in the Administrative County, which contains an estimated population of 1,859,200, are as follow :—

1. The death-rate (0·46 per 1,000 of the population) from **pulmonary** tuberculosis in the County remains the same as in the previous three years ; it continues below the pulmonary rate (0·58) for England and Wales.

2. Between 1924 and 1936 there was a steady decline year by year in the number of new pulmonary cases reported, but in 1937 there has been an increase of 60 over 1936.

3. Pulmonary tuberculosis is again more prevalent among males than females in regard to both cases and deaths. Allowing for the difference in the population of the sexes, for every 100 deaths of females in 1937 there were 149 deaths of males, and for every 100 female notifications there were 131 male notifications.

4. In 1937 the largest number of deaths from pulmonary tuberculosis among females occurs in the age-group 25-35, followed closely by the age-group 15-25 (see Table 3, page 4).

5. The greatest mortality from pulmonary tuberculosis among males in 1937 occurs in the age-group 45-55, followed by the age-group 25-35.

6. The death-rate (0·10 per 1,000 of the population) from **non-pulmonary** tuberculosis remains the same as in 1935 and 1936. It is now only one-third of the rate recorded in 1914. The rate for England and Wales is 0·11 in 1937.

7. The number of new cases of non-pulmonary tuberculosis reported in 1937 shows an increase of 29 over the previous year.

8. With regard to non-pulmonary tuberculosis, the most striking decline has occurred in the age-group 0-5 years ; in 1914 the deaths in this group totalled 286, whereas in 1937 there were only 52.

9. The saving in human life by the reduction in the County death-rate from **all forms** of tuberculosis is considerable ; for example, if the death-rate in 1937 had been the same as in 1914 there would have been 2,212 deaths instead of the actual number of 1,063—a difference of 1,149.

NEW CASES OF TUBERCULOSIS.

The following Table 1 shows since 1918 the total number of new cases of pulmonary and non-pulmonary tuberculosis reported in each year; the case-rate for pulmonary tuberculosis is also given :—

Year	Pulmonary tuberculosis				Non-pulmonary tuberculosis		
	Cases notified (<i>i.e.</i> , during life)	Cases reported at time of death only	Total known cases	Case-rate per 1,000 of population	Cases notified (<i>i.e.</i> , during life)	Cases reported at time of death only	Total known cases
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1918	2,534	303	2,837	1.64	885	137	1,022
1919	2,105	221	2,326	1.34	847	104	951
1920	2,084	177	2,261	1.30	968	122	1,090
1921	2,044	135	2,179	1.23	899	96	995
1922	1,863	105	1,968	1.11	956	83	1,039
1923	1,937	85	2,022	1.13	1,188	74	1,262
1924	1,972	64	2,036	1.14	1,120	65	1,185
1925	1,846	67	1,913	1.07	1,027	57	1,084
1926	1,828	58	1,886	1.05	953	32	985
1927	1,794	54	1,848	1.02	1,045	42	1,087
1928	1,660	56	1,716	0.94	956	51	1,007
1929	1,517	62	1,579	0.87	913	61	974
1930	1,527	46	1,573	0.87	982	61	1,043
1931	1,460	61	1,521	0.84	862	51	913
1932	1,477	37	1,514	0.83	825	28	853
1933	1,453	45	1,498	0.82	780	31	811
1934	1,315	35	1,350	0.74	774	46	820
1935	1,305	35	1,340	0.73	672	31	703
1936	1,248	46	1,294	0.70	722	24	746
1937	1,314	40	1,354	0.72	745	30	775

The total new cases of tuberculosis in 1937 amounted to 89 more than in 1936. It may be mentioned that the number of new cases transferred from other authorities to this County is 42 more than in 1936, which partly accounts for the increase.

Comparing the new cases of pulmonary tuberculosis notified in 1937 with the pulmonary notifications in 1920, reduction has taken place in the various age-groups as shown below :—

			Percentage reduction of pulmonary notifications in 1937 on 1920.
Males	0-5 years	.....	88.4
	5-15 years	.....	80.6
	15-25 years	.....	34.5
	25-35 years	.....	41.6
	35-45 years	.....	40.9
	45-55 years	.....	24.3
Females	0-5 years	.....	90.9
	5-15 years	.....	81.4
	15-25 years	.....	14.3
	25-35 years	.....	28.4
	35-45 years	.....	44.8
	45-55 years	.....	39.2
	65 years and over	.....	23.5

As against the foregoing reductions, there was a slight increase in three age-groups, *viz.*, males—55-65, 11.1 per cent., 65 and over, 7.1 per cent.; females—55-65, 8.3 per cent.

The new cases referred to in Table 1 are further dealt with in Chapter VII.

DEATHS AND DEATH-RATES FROM TUBERCULOSIS.

Table 2 below shows the number of deaths registered and the death-rates recorded during the years 1913 to 1937 in the Administrative County :—

Year.	Population.	Deaths.			Death-rate per 1,000 of population.		
		Pulmonary tuberculosis	Non- pulmonary tuberculosis	Tuberculosis (all forms)	Pulmonary tuberculosis	Non- pulmonary tuberculosis	Tuberculosis (all forms)
1913	1,749,659	1,441	527	1,968	0·82	0·30	1·12
1914	1,748,289	1,523	572	2,095	0·87	0·32	1·19
1915	1,666,488	1,614	555	2,169	0·96	0·34	1·30
1916	1,620,062	1,685	471	2,156	1·04	0·29	1·33
1917	1,568,656	1,584	466	2,050	1·00	0·30	1·30
1918	1,537,951	1,652	435	2,087	1·07	0·28	1·35
1919	1,662,716	1,339	358	1,697	0·80	0·22	1·02
1920	1,728,967	1,323	396	1,719	0·76	0·23	0·99
1921	1,758,738	1,301	376	1,677	0·73	0·21	0·95
1922	1,766,027	1,362	389	1,751	0·77	0·22	0·99
1923	1,772,658	1,250	412	1,662	0·70	0·23	0·93
1924	1,782,800	1,215	339	1,554	0·68	0·19	0·87
1925	1,785,500	1,205	361	1,566	0·67	0·20	0·87
1926	1,788,500	1,158	286	1,444	0·64	0·16	0·80
1927	1,800,300	1,105	296	1,401	0·61	0·16	0·77
1928	1,811,000	1,066	287	1,353	0·58	0·15	0·74
1929	1,811,700	1,102	279	1,381	0·60	0·15	0·67
1930	1,806,960	1,046	253	1,299	0·57	0·14	0·71
1931	1,804,400	1,021	266	1,287	0·56	0·14	0·71
1932	1,802,700	975	238	1,213	0·54	0·13	0·67
1933	1,802,730*	1,010	232	1,242	0·55	0·12	0·68
1934	1,807,090*	848	231	1,079	0·46	0·12	0·59
1935	1,821,100	855	189	1,044	0·46	0·10	0·57
1936	1,842,900	856	192	1,048	0·46	0·10	0·56
1937	1,859,200	865	198	1,063	0·46	0·10	0·57

* Consequent on the alteration of boundaries, the death-rates have been calculated on the following adjusted populations :—1932, 1,807,800 ; 1934, 1,809,597.

Of the 1,063 deaths from tuberculosis (all forms) in 1937, 189 occurred in institutions or at private addresses outside the Administrative County area and were transferred by the Registrar-General to the

County records ; 107 of the 189 transferable deaths were known to the County tuberculosis officers during life.

In Appendix I are given the tuberculosis deaths and death-rates in the 109 urban and rural districts in the Administrative County, and in the eight dispensary areas.

DEATHS FROM PULMONARY TUBERCULOSIS.

The following Table 3 shows the deaths recorded from pulmonary tuberculosis in 1937 and the preceding 16 years analysed according to sex and age :—

Period.	Estimated sex population.	Pulmonary deaths in various age-groups.									Death-rate per 1,000 of sex population
		0 to 5	5 to 15	15 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and over.	Total.	
<i>Males.</i>											
1921-25 (average)	841,030	9	15	120	131	151	153	83	26	688	0·81
1926-30 (average)	856,920	4	9	107	111	133	130	79	27	600	0·70
1931-35 (average)	859,880	3	6	78	106	105	120	89	29	536	0·62
1936	875,838	3	5	70	96	112	106	85	35	512	0·58
1937	883,584	2	1	72	98	92	121	87	24	497	0·56
<i>Females.</i>											
1921-25 (average)	929,614	8	26	172	145	104	69	37	17	578	0·62
1926-30 (average)	946,771	4	18	155	133	81	49	37	18	495	0·52
1931-35 (average)	949,240	2	13	118	114	72	41	31	15	406	0·42
1936	967,062	1	9	97	95	57	32	26	27	344	0·35
1937	975,616	1	7	103	105	69	42	23	18	368	0·37

DEATHS FROM NON-PULMONARY TUBERCULOSIS.

The mortality from non-pulmonary tuberculosis in 1937 is greatest among young children aged 0-5, followed by the age-groups 15-25 and 25-35. The actual numbers of children dying each year from this form of the disease have greatly diminished. This decline is due to segregation and supervision of the adult pulmonary cases, social measures, the safeguarding of the milk supply, and the successful modern methods of treatment of children with non-pulmonary disease.

The classification of the deaths in 1937 from non-pulmonary tuberculosis, according to part affected, is as follows :—Vertebral column, 14 ; other bones and joints, 13 ; intestines and peritoneum, 29 ; central nervous system, 81 ; disseminated, 41 ; genito-urinary, 12 ; lymphatic system, 2 ; skin and subcutaneous tissue, 6 ; total 198 (adults : males 60, females 57 ; children : males 42, females 39).

II.—DURATION OF ILLNESS OF ADULT PULMONARY PATIENTS APPLYING FOR TREATMENT IN 1920 AND IN 1937.

In my annual report for 1936, I published the results of an investigation of the duration of illness before first examination by the tuberculosis officer of positive sputum patients dying in 1920 and 1935. In that investigation it was established that there was a noticeable reduction in the duration of illness among the 1935 cases as compared with the 1920 cases, and it was concluded that this was attributable to two causes : (i) The patients consulting their family doctors earlier ; and (ii) the family doctors referring the cases to the tuberculosis officer more readily.

As it was considered it might be of interest to show any differences as between the sexes, age-groups, and negative and positive sputum cases, an extension of the investigation has this year been carried out, and the results are set out in the following paragraphs.

In this investigation, I have made an analysis of the records of adult patients suffering from pulmonary tuberculosis, applying for treatment during 1920 and 1937. It should be remembered that the last investigation referred only to patients who had died in 1920 and 1935. This year, therefore, only (a) the duration of symptoms from onset to patient consulting medical attendant, and (b) the period under treatment by medical attendant before first examination by the tuberculosis officer, have been considered, the period between the first examination by the tuberculosis officer and the date of death being, of course, inapplicable.

For the 1920 cases, the record cards of 1,276 consecutive patients were examined, information under (a) above being available in 1,146 of them, and under (b) above, in 1,143 cases. The corresponding figures for the 1937 cases were : 960 records examined, information under (a) available in 840 cases, and under (b) in 888 cases. The differences are accounted for by the lack of classifiable information on the medical history sheets.

The following Table 4 shows the results of the investigation :—

	Applying for treatment in		Difference
	1920	1937	
(a) Number of consecutive cases of pulmonary tuberculosis included in the investigation :			
T.B. minus	395	261	—
T.B. plus	881	699	—
(b) Average duration of symptoms from onset to patient consulting medical attendant (according to statement of patient, or, occasionally, relatives) :	Months	Months	Months
T.B. minus	7·6	2·9	4·7
T.B. plus	8·6	4·2	4·4
(c) Average period patients under treatment by medical attendant before first examination by tuberculosis officer :			
T.B. minus	5·4	3·2	2·2
T.B. plus	4·8	3·5	1·3
(d) Average duration of illness before first examination by tuberculosis officer [(b) plus (c)] :			
T.B. minus	13·0	6·1	6·9
T.B. plus	13·4	7·7	5·7

The details from which the foregoing table has been prepared allow of many subsidiary tables to be constructed. For instance, the comparison of 1937 with 1920 may be extended to show any difference in the duration of illness (a) of males and females, and (b) according to age groups. This information is contained in the following tables :—

TABLE 5.—*Analysis of adult pulmonary patients applying for treatment in 1920 and 1937, showing the average duration of symptoms from onset to patient consulting medical attendant (according to statement of patient or, occasionally, relatives).*

Classification	Age-groups (years)									
	15—24		25—44		45—64		65 and over		All ages 15 & over	
	Number of cases	Average period (months)	Number of cases	Average period (months)	Number of cases	Average period (months)	Number of cases	Average period (months)	Number of cases	Average period (months)
MALES.										
T.B. minus										
1920	49	9·1	102	9·5	52	8·4	2	3·2	205	9·2
1937	36	1·6	48	5·0	30	4·2	3	0·0	117	3·7
T.B. plus										
1920	123	5·3	246	11·9	111	9·0	4	6·7	484	9·6
1937	75	3·1	155	4·4	105	4·6	4	5·9	339	4·1
FEMALES.										
T.B. minus										
1920	60	4·4	66	6·2	9	0·5	—	—	135	5·0
1937	53	2·4	43	3·8	9	0·0	1	0·0	106	2·2
T.B. plus										
1920	100	4·2	184	7·8	37	13·1	1	13·5	322	7·3
1937	107	2·0	127	4·1	35	8·7	9	9·9	278	4·1

TABLE 6. *Analysis of adult pulmonary patients applying for treatment in 1920 and 1937, showing the average period under treatment by medical attendant before first examination by tuberculosis officer.*

Classification	Age-groups (years)									
	15—24		25—44		45—64		65 and over		All ages 15 & over	
	Number of cases	Average period (months)	Number of cases	Average period (months)	Number of cases	Average period (months)	Number of cases	Average period (months)	Number of cases	Average period (months)
MALES.										
T.B. minus										
1920	47	3.5	94	8.8	52	4.2	3	5.0	196	6.2
1937	35	3.0	55	2.5	38	3.1	3	3.5	131	2.8
T.B. plus										
1920	126	4.0	225	5.1	119	5.7	4	3.0	474	4.9
1937	78	3.5	161	2.9	116	4.3	5	2.7	360	3.5
FEMALES.										
T.B. minus										
1920	60	4.9	73	3.5	11	5.0	—	—	144	4.2
1937	51	2.5	44	3.5	16	7.7	1	1.5	112	3.6
T.B. plus										
1920	102	3.6	185	4.5	40	8.2	2	4.5	329	4.6
1937	108	2.9	128	4.1	40	4.2	9	3.1	285	3.6

SUMMARY AND CONCLUSIONS.

1. The duration of symptoms, from onset to patient consulting medical attendant, averaged, in 1920, 7.6 months for T.B. minus cases and 8.6 months for T.B. plus cases, as against 2.9 months for T.B. minus cases and 4.2 months for T.B. plus cases applying for treatment in 1937.

2. The reduction of 4.7 months in the average duration of symptoms, from onset to patient consulting medical attendant, of T.B. minus cases, and of 4.4 months in T.B. plus cases applying for treatment in 1937, compared with 1920, indicates that the efforts of the Public Health services to encourage patients to seek treatment earlier in the course of their illness have met with much success. There is still room for further progress.

3. The period patients were kept under treatment by their medical attendants before being examined by the tuberculosis officer averaged, in 1920, 5.4 months in the case of T.B. minus patients and 4.8 months for T.B. plus patients, as against 3.2 months for T.B. minus patients and 3.5 months for T.B. plus patients applying for treatment in 1937.

4. (a) The reduction of 2.2 months in the case of T.B. minus patients, and 1.3 months for T.B. plus patients, in the average period under treatment by medical attendants before first examination by the tuberculosis officer, in 1937 compared with 1920, shows that the general

practitioners are more readily suspecting tuberculosis and indicates their greater confidence in the scheme. This is borne out by the percentage of new cases referred by medical practitioners to the tuberculosis officers for an opinion as to diagnosis or treatment before statutory notification : in 1937 the figure was 92 per cent. as against 73·5 per cent. in 1920.

(b) There is, however, a great deal of room for improvement in the time-lag between the patient coming under treatment by the medical attendant, and being referred to the tuberculosis officer.

5. No striking differences are demonstrated between T.B. minus cases and T.B. plus cases, nor between males and females.

6. The results of this investigation reinforce the findings of last year's investigation, namely, (i) that patients consult their family doctors nowadays at an earlier stage of their disease than in 1920, and (ii) that the family doctors refer the cases to the tuberculosis officer more readily.

III.—TUBERCULOSIS OF THE PHALANGES, METACARPAL AND METATARSAL BONES.

By E. H. A. PASK, M.D., M.R.C.S., L.R.C.P.

*Medical Superintendent of Wrightington Hospital, and Consultant
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At Wrightington Hospital, an institution for the treatment of non-pulmonary tuberculosis, of a total number of 2,022 admissions, 33 patients were suffering from tuberculosis affecting the phalanges, metacarpal or metatarsal bones and including those with disease of the intervening joints in addition to the bones. Tuberculosis in these areas is usually stated to be much more common in children than in adults, yet in this series there are 18 children and 15 adults; the large proportion of adults is rather surprising.

As the symptoms, radiographic appearances and treatment are so different in adults as compared with children it is proposed to deal separately with the two conditions.

THE LESIONS IN CHILDREN (18 cases. See Table 7).

The condition in children is designated tubercular dactylitis (*spina ventosa*) and is usually a painless affection. The finger presents a reddish swollen appearance and is fusiform in shape; sinuses may be present. In this series of cases there were sinuses in half the number, and small sequestra were shed from them in three cases. When there is extensive bone destruction deformity results, which may be permanent owing to the failure of the bone to undergo regeneration. The radiographic appearances are different from tuberculosis affecting the larger bones and joints, in that it is the shaft of the bone which is affected, the actual joint remaining free from disease; the condition is that of osteitis. The shaft is usually foreshortened and broadened, there are areas of rarefaction with irregular trabeculation, and frequently stripping of the periosteum. The response to treatment is good, provided there are no tubercular lesions elsewhere, and repair is usually complete, so much so

that in the final radiograph it is difficult to detect the site of the original lesion, the diseased bone having undergone complete reconstruction ; even the bony trabeculae are restored to normal—a result never attained in tuberculosis of the larger bones and joints if there has been any previous bony destruction (see skiagrams W.1, W.2, W.3 and W.4).

In children, the occurrence of other tubercular lesions elsewhere in the body is not so common as in adults, although in this series of 18 cases in 7 of them other foci were present elsewhere. The progress is generally good as regards the lesion itself, but if there are other tubercular foci in the body these have to be taken into consideration in assessing the outlook. In the series there was one death, due to tubercular meningitis, and in this case there were no other foci beyond the terminal miliary spread.

The lesions in the hand and foot are frequently multiple ; in 7 cases more than one bone was affected. Sometimes they give rise to no symptoms or signs and are detected only in the skiagrams.

It is interesting to note that there was a definite family history of tubercle in 7 cases and in 5 either a mother or a father had a positive sputum, suggesting that the infection was due to the human type of tubercle bacillus.

The treatment of tubercular dactylitis in children is mainly conservative. Fresh air, good food and general hygienic measures play an even more important role than in tuberculosis of the larger bones and joints. Rest to the affected part in practice is not always easy to obtain, especially in babies, and provided there is no gross tendency to deformity satisfactory results have been attained without any form of splintage, although it is advisable, wherever possible, to apply some form of apparatus to rest the part. Various splints can be employed ; a wooden tongue depressor will often serve the purpose. While a light duralumin splint suitably shaped is effective, a carefully moulded plaster gutter splint is probably the best. The part should never be completely enveloped in plaster, owing to the possibility of an abscess or sinus occurring beneath the plaster. The only form of operative interference justifiable is amputation and this is reserved for a small minority of cases in which there is no evidence of healing after prolonged immobilisation. It should be emphasised that conservative measures should be prolonged, and resistant cases may require at least two years' splintage before recovery is complete. Amputation should be resorted to only after conservative treatment has definitely failed. It will be seen from Table 7 that in this series amputation was done in only one case,

TUBERCULOSIS OF PHALANGES, METACARPAL AND METATARSAL BONES.



W.1 (a).—A.D., male, aged 17 months. Right hand. Skiagram taken 23-6-34, before treatment, shows extensive disease of whole of 4th metacarpal bone, the original outline of which is completely lost. There is considerable broadening of the bone with an irregular jagged outline.



W.1 (b).—Same patient. Skiagram taken 2-1-35, after treatment, shows reconstruction of the bone which is now approximating the normal contour.

(Skiagrams taken at Wrightington Hospital).



W.2 (a).—M.A., female, aged 1 year. Multiple lesions right hand. Skiagram taken 28-10-35, before treatment, shows disease of 1st and 2nd phalanges of index finger with swelling of the soft parts. The 1st phalanx is broadened and rarefied, with a large area of cavitation. The 2nd phalanx has largely disappeared, and is represented by two or three spicules of bone. There is considerable swelling of the soft parts.



W.2 (b).—Same patient. Multiple lesions left hand. Skiagram taken 28-10-35, before treatment, shows three lesions—(a) 1st phalanx of thumb, (b) 2nd phalanx of index finger, and (c) 1st phalanx of ring finger. There is considerable disease of all these bones.

(Skiagrams taken at Wrightington Hospital).



W.2 (c).—Same patient. Right hand. Skiagram taken 30-12-36, after treatment, shows reconstruction of 1st phalanx which has almost a normal outline. The 2nd phalanx has undergone a certain amount of reconstruction compared with the appearances before treatment.



W.2 (d).—Same patient. Left hand. Skiagram taken 30-12-36, after treatment, shows (a) complete reconstruction of 1st phalanx of thumb, (b) complete reconstruction of 2nd phalanx of index finger, and swelling of soft parts to have completely subsided, and (c) 1st phalanx of ring finger is largely reconstructed. There is a cavity remaining at the distal end with a sequestrum.

(Skiagrams taken at Wrightington Hospital).



W.3 (a).—G.N., male, aged 11½ years. Right hand. Skiagram taken 11-8-32, before treatment, shows disease of 5th metacarpal, which is shortened and broadened with several rarefied areas.



W.3 (b).—Same patient. Left hand. Skiagram taken 11-8-32, before treatment, shows disease of proximal phalanx of ring finger with shortening and broadening of bone with considerable irregularity of internal and external borders, and solution of continuity.

(Skiagrams taken at Wrightington Hospital).



W.3 (c).—Same patient. Right hand. Skiagram taken 4-1-33, after treatment. The bone has become narrowed and lengthened and approximates the normal shape. There is still some rarefaction.



W.3 (d).—Same patient. Left hand. Skiagram taken 4-1-33, after treatment, shows a regular outline of the bone, and normal shape.

(Skiagrams taken at *Wrightington Hospital*).



W.4 (a).—E.H., female, aged 12 years. Right hand. Skiagram taken 8-8-32, before treatment, shows disease of middle phalanx of ring finger. Practically the whole of the bone is diseased and presents a jagged, irregular, ill-defined outline.



W.4 (b).—Same patient. Skiagram taken 20-5-35, after treatment. A good deal of reconstruction has taken place. There is some resultant deformity owing to the extent of the lesion.

(Skiagrams taken at *Wrightington Hospital*).



W.5.—W.B., male, aged 24 years. Right foot. Skiagram taken 3-3-32 shows disease of 1st metatarso-phalangeal joint with widening and irregularity of the joint space, erosion of the articular cartilage, and rarefied areas in the adjacent bones. This is a typical example of the type of disease seen in adults. Treatment : Excision of joint.



W.6.—H.C., male, aged 51 years. Left hand. Skiagram taken 29-10-37. This is an example of early disease of 1st inter-phalangeal joint of ring finger. The joint space has largely disappeared and there is some irregularity of the articular surfaces of the bones. Response to conservative treatment satisfactory. The terminal phalanx of the middle finger had been amputated previously following an injury.

(Skiagrams taken at Wrightington Hospital).

THE LESIONS IN ADULTS

(15 cases. See Table 8).

In adults this condition is generally regarded as not being nearly so common as in children, although 15 cases occurred in the former as compared with 18 cases in the latter. The site of the disease is situated in a joint, the interphalangeal, metacarpo-phalangeal and metatarso-phalangeal joints being affected. The radiograph shows irregularity and narrowing of the joint space, erosion of the articular cartilages and general rarefaction of the adjacent bones—a picture very similar to that seen in tuberculosis of the larger joints, *e.g.*, hip and knee, thus contrasting markedly with tubercular dactylitis in children, where the shaft of the bone is involved. In the cases where the disease has become quiescent there is always evidence seen in the radiograph of the presence of disease, the parts never being restored to their normal contour as in tubercular dactylitis. It will be seen from Table 8 that associated lesions elsewhere in the body are much more common than in children, other foci being present in 12 cases out of 15. The association of this condition with pulmonary tuberculosis is noteworthy ; it was present in 9 cases. Another feature contrasting with tubercular dactylitis in children is the fact that the lesions in the hand and foot are not multiple in adults. Sinuses were present in 9 cases, the proportion being somewhat larger than in children, although there were no sequestra—again simulating the condition seen in the larger joints where sequestra are rarely seen.

The disease was situated in the bones of the hand in 9 cases, and in the bones of the foot in 6 cases. The prognosis in these cases is not good, as there are usually other tubercular lesions in the body, frequently of a severe nature ; it will be seen from Table 8 that there were 3 deaths.

The response to treatment is poor, owing to the fact that these patients have their resistance lowered by multiple foci of tubercle elsewhere and conservative treatment usually fails. Amputation is the best course, and 8 cases received this form of treatment ; in one case the joint was excised with a good result.

In adults chronic hypertrophic tuberculosis of the flexor tendon sheath of the finger presents a similar clinical picture to disease in an interphalangeal joint ; there is considerable swelling of the digit, frequently with sinuses, but the condition may be differentiated as no bony changes are seen in the radiograph,

SUMMARY AND CONCLUSIONS.

1. 33 cases are reviewed of tuberculosis of the small bones of the hand and foot and the intervening joints occurring in 18 children and 15 adults.
2. The condition varies considerably according to age. In children the disease is an osteitis of the shaft of the bone, and in adults the joints are involved.
3. In adults the condition is associated with other tuberculous foci elsewhere and pulmonary tuberculosis is a common complication.
4. The prognosis and results of treatment are much more satisfactory in children than in adults.

TABLE 7. *Record of 18 cases of tuberculous dactylitis in children.*

Patient.	Family history.	Sinuses.	Se-questra.	Other tuberculous lesions.	History of injury.	Lesion.	Treat-ment.	Duration of illness.	Duration of hospi-tal treat-ment.	Present con-dition.
E.E., female, aged 2 years	Nil	Nil	Nil	Nil	Nil	Left foot : 2nd metatarsal	Crab splint	3 wks.	8 mths.	Quies-cent
F.N., male, aged 10 years	Nil	Yes	Yes	Nil	Nil	Right foot : 3rd metatarsal	Crab splint	7 wks.	3 mths.	Left the dis-trict
E.F., female, aged 3 years	Nil	Nil	Nil	Menin-gitis	Nil	Right foot : 1st metatarsal	Crab splint	8 wks.	10 wks.	Died, tub. menin-gitis
M.H., female, aged 13 years	Father, pul. tub., pos. sputum	Yes	Nil	Nil	Nil	Rt. foot : Head of 1st meta-tarsal	Crab splint	5 mths.	12 mths.	Quies-cent
M.A., female, aged 1 year	Mother, pul. tub., pos. sputum	Yes	Nil	Nil	Nil	Rt. hand : 2nd terminal phalanx of index finger Left hand : Prox-imal phalanx of thumb and index finger	Plaster gutter splint	5 mths.	7 mths.	Quies-cent
A.T., male, aged 2 years	Nil	Abscess and sinuses	Nil	Nil	Nil	Rt. hand : Mid-dle metacarpal Left hand : Prox-imal phalanx of little finger. Upper end of ulna	Dura-lumin cock-up splint	6 mths.	9 mths.	Quies-cent
E.B., female, aged 2 years	Father, pul. tub., pos. sputum	Nil	Nil	Nil	Nil	Multiple both hands	Plaster cock-up splint	3 wks.	8 mths.	Quies-cent
R.R., male, aged 9 years	Nil	Nil	Nil	Nil	Yes, after a fall	Left hand : 5th metacarpal	Metal cock-up splint	11 mths.	*2 mths.	Becom-ing quies-cent
J.H., male, aged 2 years	Nil	Nil	Nil	Adenitis neck	Yes, after a fall	Left hand : 2nd metacarpal	Plaster	10 mths.	7 mths.	Quies-cent

* Still under treatment.

TABLE 7—Continued.

Patient.	Family history.	Sinuses.	Se-questra.	Other tuberculous lesions.	History of injury.	Lesion.	Treatment.	Duration of illness.	Duration of hospital treatment.	Present condition.
A.D., male, aged 17 months	Uncle, tub. glands	Yes	Nil	Nil	Nil	Rt. hand : 4th metacarpal	Medicated saw-dust and duralumin splint	Indefinite	7 mths.	Quiescent
M.F., female, aged 7 years	Father, pul. tub., pos. sputum	Nil	Nil	Spine	Nil	Rt. hand : Middle phalanx of little finger	Splint	Indefinite	8 mths.	Quiescent
J.H., female, aged 12 years	Nil	Yes	Yes	Left sacro-iliac joint	Nil	Rt. hand : Middle phalanx of ring finger	Incision	2 mths.	5 mths.	Finger quiescent
M.M., male, aged 2 years	Nil	Nil	Nil	Nil	Nil	Rt. hand : 2nd phalanx of little finger	Duralumin splint	15 mths.	8 mths.	Quiescent
J.N., male, aged 18 months	Nil	Nil	Nil	Nil	Nil	Multiple phalanges both hands, and 5th metacarpal rt. hand	Plaster	10 wks.	10 mths.	Arrested
A.A., male, aged 9 years	Yes	Yes	Nil	Multiple skin lesions	Yes	Left hand : 1st phalanx of ring finger	Sano-crysin and amputation	5 years	29 mths.	Left the district
J.L., female, aged 7 months	Mother, died pul. tub., pos. sputum	Nil	Nil	Glands and chest (epi-tuberculous)	Nil	Multiple hands and feet	Gutter, club-foot, and plaster gutter splints	2 wks.	21 mths.	Transferred to another hospital
A.K., male, aged 8 months	Nil	Yes	Yes	T.B. minus Nil	Nil	Rt. hand : Proximal phalanx index finger Right foot: 2nd metatarsal	Duralumin splint	8 wks.	*12mths.	Becoming quiescent
J.H., male, age 11 years	Nil	Yes	Nil	Lupus of hand and foot	Yes	Left foot : 3rd metatarsal Left thumb metacarpal	Crab splint, excision of lupoid skin over foot, and sano-crysin	12 wks.	4 mths.	Bony lesions quiescent

* Still under treatment.

[Table 8 overleaf.]

TABLE 8. *Record of 15 cases of tuberculosis of the phalanges, metacarpal and metatarsal bones in adults.*

Patient.	Family history.	Sinuses.	Se-questra.	Other tuberculous lesions.	History of injury.	Lesion.	Treat-ment.	Duration of illness.	Duration of hospi-tal treat-ment.	Present con-dition.
G.T., male, aged 36	Nil	Yes	Nil	Pulm. tub., pos. sputum	Nil	Left hand: Mid- dle finger	Ampu- tation	12 mths.	3 mths.	Died, pulm. tub.
S.B., male, aged 58	Nil	Yes	Nil	Pulm. tub., neg. sputum	Yes	Left hand: In- dex finger	Ampu- tation	13 mths.	3 mths.	Quies-cent
I.G., female, aged 29	Nil	Yes	Nil	Lupus, ribs, glands of neck	Nil	Left hand: In- dex finger prox- imal phalanx	Cock-up splint	4 mths.	2 mths.	Pro- gress satis- factory
G.L., male, aged 27	Nil	Nil	Nil	Pulm. tub., pos. sputum	Nil	Left hand: Ter- minal joint of index finger	Ampu- tation	?	1 mth.	Died, pulm. tub.
G.M., male, aged 18	Nil	Nil	Nil	Pulm. tub. (minus), lupus but- tock, and soft parts	Nil	Left hand: 1st phalanx index finger	Dura- lumin splint	?	12 mths.	Left thoe dis- trict
J.P., male, aged 24	Sister, tub. glands	Nil	Nil	Genito- urinary and spine	Nil	Right hand: 1st inter-phalangeal joint middle finger	Dura- lumin splint	Indefi- nite	14 mths.	Quies-cent
M.B., female, aged 22	Nil	Yes	Nil	Nil	Nil	Right hand: In- dex finger	Ampu- tation before admis- sion	12 mths.	3 mths.	Quies-cent
S.Y., male, aged 40	Nil	Yes	Nil	Pulm. tub. (minus) and wrist	Nil	Right hand: 5th carpo-metacar- pal joint	Ampu- tation	38 mths.	2 mths.	Left thoe dis- trict
H.B., male, aged 20	Nil	Nil	Nil	Rt. ankle and lum- bar abscess	Nil	Left hand: 1st inter-phalangeal joint middle finger	Sano- crysins and ampu- tation	4 mths.	12 mths.	Quies-cent
J.W., male, aged 53	Nil	Yes	Nil	Pulm. tub. (minus)	Nil	Rt. foot: Meta- tarso phalangeal joint 2nd toe	Ampu- tation of joint af- fected	18 mths.	7 mths.	Quies-cent
A.C., female, aged 61	Nil	Yes	Nil	Pulm. tub. (minus)	Nil	Left foot: 3rd tarso-metatar- sal joint	Crab splint. Ampu- tation re- fused	Indefi- nite	3 mths.	Trans- ferred to an- other insti- tution
J.C., male, aged 55	Nil	Nil	Nil	Pulm. tub. (minus)	Nil	Rt. foot: Meta- tarso phalangeal joint big toe	Crab splint and metal insole	18 mths.	6 mths.	Quies-cent
E.T., male, aged 17	Father, pul. tub., pos. sputum	Yes	Nil	Nil	Yes	Right foot: 2nd tarso-metatar- sal joint	Plaster	5 yrs.	2 mths.	Quies-cent
W.S., male, aged 66	Nil	Yes	Nil	Pulm. tub. (minus), mesenteric glands, liver	Nil	Right foot: 5th tarso-metatar- sal joint	Ampu- tation	8 mths.	7 mths.	Died, tox- aemia
W.B., male, aged 24	Nil	Nil	Nil	Nil	Nil	Right foot: 1st metatarsal phalangeal joint	Ex- cision of joint	20 yrs.	2 mths.	Arrested

IV.—INDICATIONS FOR MAJOR SURGICAL TREATMENT IN PULMONARY TUBERCULOSIS.

BY F. RONALD EDWARDS, Ch.M., F.R.C.S.,
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The results over many years of compression therapy in pulmonary tuberculosis have shown that this form of treatment places the lung in the best possible position for the healing of the tuberculous focus.

The ideal collapse of the lung is produced by an artificial pneumothorax, and this should be attempted in all cases where compression is indicated. If this is satisfactory then it is unlikely that any further form of operative treatment will be necessary, unless, possibly later, it is supplemented by a phrenicectomy. In many cases, however, difficulties will be manifest in this former procedure. A pneumothorax may be induced but the compression of the lung is unsatisfactory due to adhesions, or the cavities have such rigid walls that they cannot be adequately collapsed. The pneumothorax may be induced but cannot be maintained, or, finally, a pneumothorax cannot be induced at all. In such cases further forms of surgical treatment are indicated to produce the necessary collapse. It is a serious menace to the recovery of the patient if a pneumothorax is persisted with which is not adequately controlling existing cavities.

THORACOSCOPY WITH DIVISION OF ADHESIONS.

It is nearly always found that these adhesions are associated with an underlying focus in the lung. The constant tug of these adhesions due to the cardiac and respiratory rhythm maintain activity in these foci, or prevent the collapse and even enlarge underlying cavities. Division of these adhesions will allow the lung to collapse satisfactorily.

All such cases should receive careful consideration of the benefit that might accrue from the division of these adhesions, and this procedure is of very considerable value in nearly every case.

The operation is performed under local anaesthesia and, except for length of time involved, is of no more discomfort to the patient than a simple refill.

THORACOPLASTY.

If control of the lung cannot be maintained by pneumothorax then compression of the lung by thoracoplasty should be considered.

The first essential point in considering a case for thoracoplasty is that the lesion should be a unilateral one. Old mild disease on the opposite side that has healed does not contra-indicate the operation, but it must be borne in mind that the opposite lung has got to carry on with the total respiration for the rest of the patient's life. Any active lesion in this lung would therefore rapidly become disseminated.

An acute lesion contra-indicates thoracoplasty, but as soon as fibrosis is taking place in that lung thoracoplasty may be considered. Cavity formation is an ideal indication, and even the most rigid walled cavities can be collapsed by this means. Isolated examples of spontaneous disappearance of cavities are recorded, but this is rare, and the patient should not be denied the benefits of compression therapy in the hope that this may occur.

Provided that long and futile delay has not caused excessive thickening of the pleural membranes, tuberculous empyemata respond well to thoracoplasty. There is obliteration of the empyema cavity with collapse and healing of the underlying diseased lung.

The general condition of the patient is an important factor for consideration. If the patient is very toxic he is unsuitable for any major surgical procedure, but the operation as now performed in a number of stages has enabled life to be saved and healing to result in many desperate cases. It is essential that the patient's general condition should be built up to the highest possible level prior to the operation. Very occasionally this may result in apparent arrest of the activity, but it is most unwise in such cases to yield to the temptation to postpone the operation until recrudescence takes place, as it may then be too late owing to metastatic infection.

The age of the patient should not as a rule be over 50 years, as the cardio-vascular system over this age may not stand the changes in intra-thoracic physiology produced by the operation.

If the lesion is confined to the apical region only, then an apical thoracoplasty of only seven ribs may be considered.

The operation as now performed is done under general anaesthesia with preliminary injection of evipan. This is so delightful a method of induction that the patients have not the slightest apprehension of the successive stages of the operation.

The post-operative deformity is not great, and is to all intents and purposes unnoticeable when the patient is dressed.

EXTRAPLEURAL PNEUMOTHORAX.

This consists of stripping the parietal pleura from the apex of the thoracic cavity down to the level of the 8th or 9th rib. Air is then injected into the space between the pleura and the endothoracic fascia and the collapse of the upper two-thirds of the lung maintained by this means.

The indication for this type of operation is a lesion in the upper zone.

It has the advantage that no extensive rib resections are necessary and that the operation can be done on patients unsuitable for thoracoplasty. The results, to date, are encouraging, but the final position of this operation in the treatment of pulmonary tuberculosis is still *sub judice*.

COMMENT.

The whole of the success of the surgical treatment of pulmonary tuberculosis depends upon the enthusiastic co-operation of the entire staff of the tuberculosis organisation. The tuberculosis physician who first sees the case is encouraged to follow it right through its course of treatment, as it is he who will eventually have to supervise the patient's life when he returns home. It is only by seeing and studying the surgical side of the treatment that the physician can confidently advise this form of therapy for his patients. It is equally important that patients should see about them those patients who have undergone the various surgical procedures, so that they may be encouraged by the satisfactoriness of the final outcome.

Every facility is given for free discussion with the surgeon of cases presented for a surgical opinion and the personal attendance of the physician and all those interested is welcome.

The whole-hearted co-operation of the nursing staff is as necessary as that of the medical staff and obtains.

The happy result of such team work in Lancashire is shown by the surgical statistics given in this report.

RESULTS.

For results and comments on division of adhesions, phrenic nerve interruption, and thoracoplasty at High Carley Sanatorium, see pages 102 to 105.

V.—TOMOGRAPHY.

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Tomography is a method of selective radiography which gives a picture, or tomogram, consisting substantially of the x-ray image of a selected thickness of the object, as distinct from the image of the whole thickness which is obtained by the usual radiographic technique.

The distinction between tomography and radiography has a crude counterpart in ordinary photography. Suppose it is desired to photograph a building in a busy street, with the special requirement that no passers-by shall appear in the picture; conditions are such that at no instant is it possible to take even a "snap" without including an unwanted passer-by. It is evident that by arranging conditions (lens, film, light-filter, etc.) so that a very long exposure is required, the images of the passers-by would be blurred in the photograph and would be of such feeble intensity as to be invisible.

The building corresponds to the selected thickness of the object which it is desired to delineate by tomography, and the passers-by correspond to the portions of tissue which have to be "blurred out" to obtain the required result.

In the following pages an attempt is made to present in simple form an account of the objects and principles of tomography, without special reference to any particular type of apparatus.

The objects are chiefly two-fold: To correct (a) superimposition of images, and (b) want of differentiation of tissues. The following examples will make these objects clear.

In an ordinary skiagram of the chest the image seen in any circular area of the film represents the projection on one plane of a cylinder of tissue having a length equal to the thickness of the chest. The objects present in such a cylinder are situated at various distances from the film, but all produce on the film images of practically equal sharpness.

It is evident that the image of any one object is liable to be confused by the images of other objects, especially larger or denser objects, owing to the *superimposition* of the various images.

Also, in two adjacent cylinders the tissues present may be of similar density in respect of, say, 90 per cent. of their contents, differing only in respect of the remaining 10 per cent. The ratio of the opacities of these cylinders is not the ratio of the 10 per cent. portions in which they differ, but is the ratio of the 90 per cent. portion plus the 10 per cent. portion of each. It is evident that if the 10 per cent. portions differ only slightly in density there may be no noticeable difference in the total opacities of the two cylinders. There would then be a *want of differentiation* of densities in the skiagram.

Tomography has shown that this occurs to a surprising extent, and that pulmonary cavities may be present and yet show no image in an ordinary film. In these cases the opacity of the tissue immediately surrounding the cavity, plus the opacity of the tissues behind and in front of the cavity, amounts to approximately the same total opacity as that of adjoining tissues which do not contain a cavity.

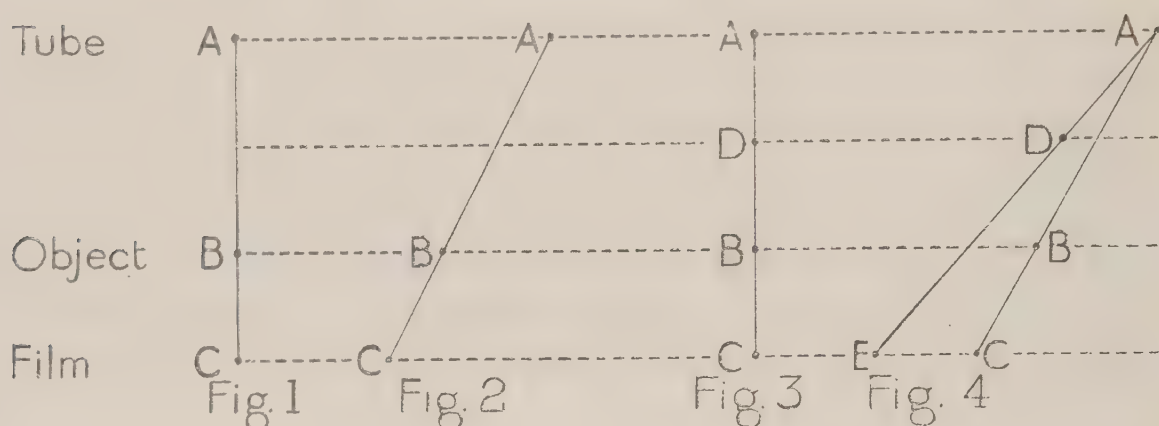
To some extent these two objects of tomography are similar, but as they are attained with unequal degrees of success, it appears desirable to make a distinction between them.

The following paraphrases appear of some assistance in emphasising the distinction between the two objects :—

(a) To “ get behind ” some opaque object (*e.g.*, a thickened pleura) so that a satisfactory image may be obtained of the tissues which it conceals.

(b) To remove, radiographically, comparatively large zones of tissue of only slight or average density, so that the image of a desired zone may be the more clearly delineated. By this means the size and shape of pulmonary cavities may be traced in a series of tomograms.

The basic principle of tomography consists in the movement, during exposure, of two of the three items—tube, film, and object. The nature and degree of movement are subject to much variation. The following is a simple example :—



A is the focal spot of an x-ray tube which is free to move in a horizontal straight line AA. B is a fixed object. C is the centre of a film which is free to move in a horizontal straight line CC, parallel to and vertically under AA.

In Fig. 1 the tube is vertically above, and the film vertically below B. The image of B will therefore fall on C.

In Fig. 2 the tube and film have moved horizontally in opposite directions and to different degrees, so that the line joining them still passes through the object. The image of B will again fall on C.

Fig. 3 shows the conditions of Fig. 1 plus an additional object D vertically above B. The image of D will be superimposed on that of B at point C.

Fig. 4 shows the conditions of Fig. 2 plus the additional object D vertically above B. It is seen that the image of D does not now fall at C, but at E. It is easily shown that for each position of A the image of D will fall on a different point of the film.

By moving the tube and film in the manner shown, D will therefore produce no distinct image, but only a blurred streak in the direction of movement. At the same time the image of B will always fall on C, and other points in the same horizontal plane as B will produce clear images at points other than C.

These examples illustrate a practical method of tomography which is applicable to any x-ray apparatus having a Potter-Bucky table with sliding film carrier, and a sliding tube-stand which can be moved alongside the table parallel to the film carrier guides. The method of producing the necessary movement of tube and film is of minor importance, but it is necessary that the tube pillar should move smoothly without appreciable "whip" or oscillation, and that the film carrier should have the minimum clearance in its guides. If these points are not attended to, undesirable blurring of the whole film may occur.

The fundamental mathematical principle of this form of tomograph is very simple, and may be stated thus :

If the tube and film are moved simultaneously in opposite directions in parallel horizontal planes in such a manner that the linear movement of the tube bears a constant ratio to that of the film, a plane of optimum definition will occur at the level which divides the distance between the tube plane and the film plane in this same ratio.

For example, if the film moves only one inch for every 8 inches of horizontal displacement of the tube, the ratio of movement is 8:1, and the plane of best definition will be situated at a distance from the film equal to one-ninth the distance between the planes of the tube and film. If this distance be 36 inches, then the plane of best definition will be 4 inches above the film, or 2 inches above the table, if the film is the usual 2 inches below the level of the table top.

It is evident that varying the height of the tube provides a method of selecting a desired plane of sharp definition. Alternatively, the desired plane can be selected by varying the ratio of tube movement to film movement. The latter method is slightly more complicated, but avoids the slight disadvantage of variation of exposure necessitated by varying tube-film distances.

It seems probable that for the present most tomographic attachments to existing x-ray sets will work on this principle of constant ratio of tube displacement to film displacement in parallel planes. An inconstant ratio is quite inadmissible, because it would cause blurring of the whole film, including the parts which were intended to be sharply defined.

Possible alternative methods of moving the tube and film are the following :—

1. Movement in horizontal arcs. As regards the tube, this movement could be obtained by rotating the tube carriage around the tube

pillar. The complementary movement of the film carrier would be difficult to obtain. Only a comparatively small arc could be used, and the chief theoretical advantage of the method is the ability to produce slight lateral blurring of unwanted planes, in addition to the major longitudinal blurring normally produced.

2. Movement of the tube and film in vertical arcs. This is the method adopted in the tomograph marketed by the Sanitas Company of Berlin. It is claimed that this method gives better results than most others, but the advantages are practical rather than fundamental. In particular, the tube-film distance remains constant and the effective radiation of the film is uniform in all positions of the tube. In the "parallel plane" methods the tube-film distance varies during the travel of the tube, and is a minimum when the tube is vertically over the film. Theoretically this is undesirable because it tends to obscure the tomographic effect by the superimposition of a "normal skiagram" effect. In practice, however, it is found that this objection has no weight.

3. Movement of the tube and film in parallel planes, but moving each in complicated orbits instead of in straight lines. As regards the tube, the required type of movement could be obtained by combining two simple movements—(a) the usual linear displacement of the tube pillar, and (b) sliding the tube along the horizontal tube carriage in a direction at right angles to the linear movement of the tube pillar. It would be difficult to cause the tube to move smoothly, and still more difficult to produce the necessary complementary movement of the film carriage. But if a satisfactory mechanism were devised it would have the advantage of producing blurring of the unwanted zones of tissue in several directions instead of in one. Numerous pieces of apparatus have been designed on this principle but none has survived.

In any apparatus it is easy to produce gross blurring of the unwanted zones, but only at the expense of producing excessive blurring of the desired zone. An apparatus such as that indicated above would allow considerable blurring of the unwanted parts with minimal blurring of the required clear zone.

The manner in which the tomograph produces its effect is a combination of blurring and under-exposure of the unwanted zones of tissue. Referring again to Fig. 4, if it be postulated (as has been done) that the tube A and film C move in opposite directions with a constant ratio, so that the line joining A and C always passes through the object B, then

during an exposure of, say, one second—consisting of 50 or 100 separate flashes, according to whether the apparatus utilises half- or full-wave rectification—the images of B are superimposed at C, and build up a suitable degree of density in the film. The images of D, however, are not superimposed on the film, but fall side by side in a straight line. If the exposure were excessive, the 50 or 100 elements which go to form this straight line might each produce sufficient blackening of the film to cause the image of D to appear as a definite black line. But under normal conditions, where the exposure is only just sufficient to produce satisfactory blackening at C, it will necessarily be insufficient to produce anything like the same blackening in the linear image of D. The exact degree of this blackening will depend partly upon the exposure, and partly upon the amount of displacement of the tube, the latter factor determining the extent to which the successive images of D overlap slightly instead of being entirely separate.

In order to apply this argument to practical work it is only necessary to stipulate that point B represents any point in the periphery of an object at the plane of best definition, and point D any point in the periphery of an object in any other plane. From this it follows that objects in the plane of best definition will be sharply defined, while other objects will have their outlines, especially their transverse outlines, blurred in the direction of movement of the tube and film.

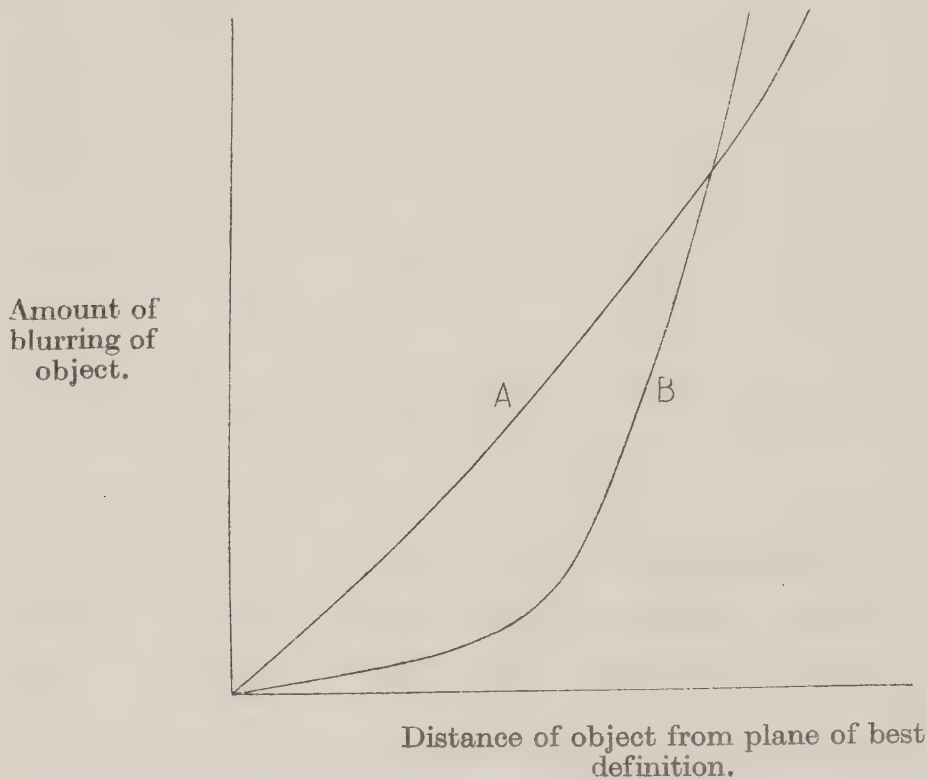
The plane of sharp definition is of very limited thickness, but it is possible to place a piece of fine wire mesh in this plane and produce a tomogram of it showing a very satisfactory image. If, however, one attempts to tomograph a thicker object, difficulty may be encountered, as in the following example.

Suppose a person's hands are placed horizontally one above the other on a small cushion on the x-ray table, with the fingers of the right hand at right angles to those of the left, and a small pad between the hands to separate them slightly: the fingers are to point in directions intermediate between the long and short axes of the table. The problem is to produce a tomogram showing the upper hand distinctly, and the lower hand not at all.

The tomograph mechanism will be arranged to produce the plane of best definition at the centre of the thickness of the upper hand. If the displacement of the tube and film during exposure are slight, the thickness of this plane can be made sufficient to give good definition to the whole thickness of the upper hand, but at the same time the definition of the lower hand will not be sufficiently unsharp to blur it out of the picture.

Conversely, if a sufficient displacement of the tube is used to blur out the lower hand, the zone of sharp definition will probably be so thin that it does not include the whole thickness of the upper hand. The upper hand will then not be sharply defined.

The following chart illustrates the facts on which these deductions are based :—

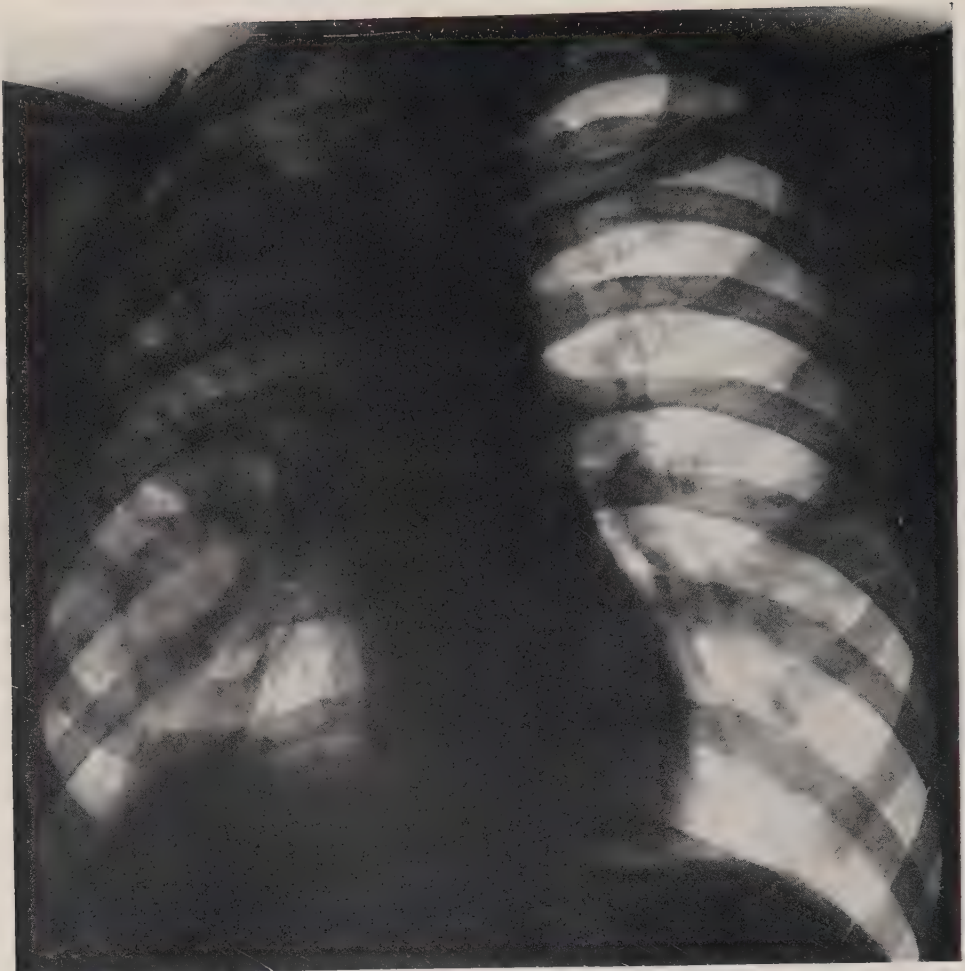


Curve A represents the amount of blurring of an object (ordinates) plotted against the distance of the object above or below the plane of best definition (abscissae). The slope of this curve is decided by the amount of displacement of the tube—the greater the displacement, the more vertical the graph. The curve is almost a straight line, indicating that the degree of blurring of an object is approximately proportional to its distance from the plane of best definition. When this distance is nil, *i.e.*, when the object is situated in this plane, the blurring is nil; and as the distance of the object from this plane increases, the amount of blurring of the object increases. The important point to notice is that the rate of this increase is practically uniform, so that it is impossible to point to any part of the curve and say that up to this point objects are reasonably well defined, while beyond this point there is a sudden deterioration in the definition.

For tomographic purposes it is desirable that the graph should have the form of curve B, where a definite “heel” is present. In this case,

SKIAGRAMS
ILLUSTRATING
TOMOGRAPHY.

TOMOGRAPHY.



T.1(a).—T.L., male, aged 25 years. T.B. plus 3. Skiagram showing extensive disease with multiple cavitation on right side.

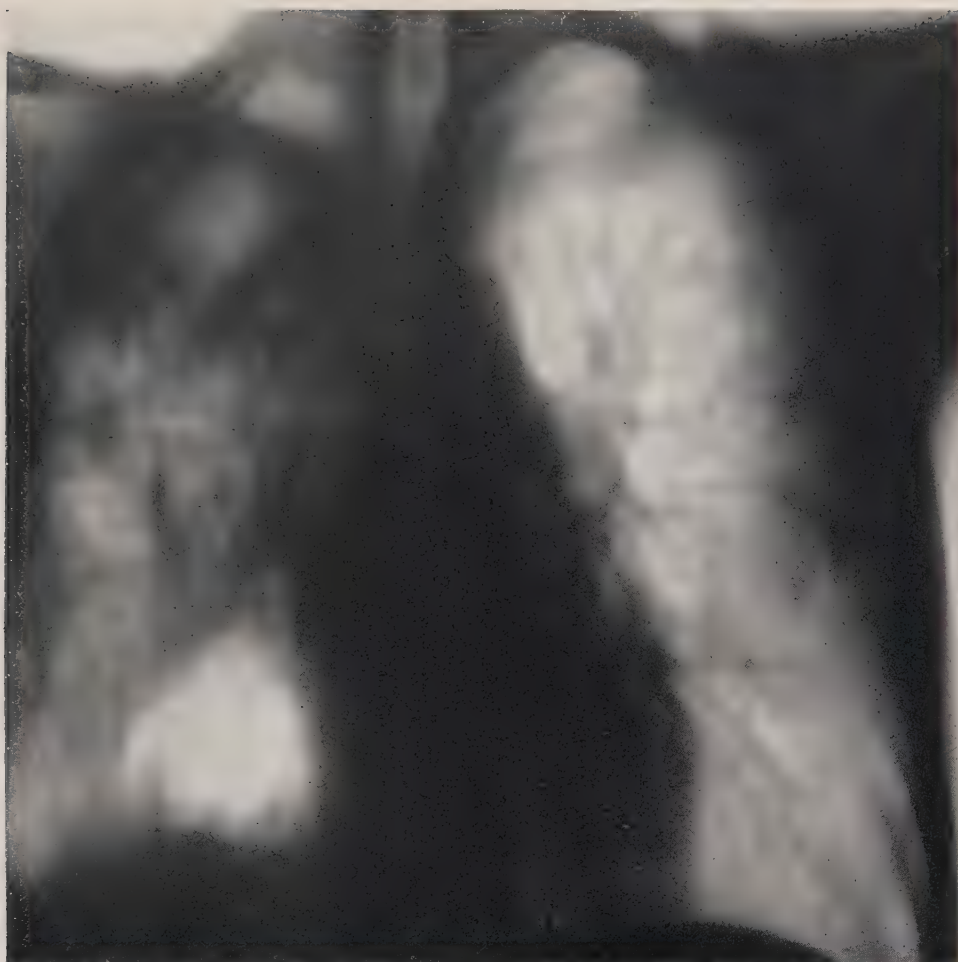


T.1(b).—Same patient. Anterior tomogram $4\frac{1}{2}$ inches from posterior surface of chest shows several cavities on right side.

(Skiagrams taken at Lancaster Pulmonary Hospital).

RIGHT.

LEFT.



T.1(c).—Same patient. Median tomogram $3\frac{1}{4}$ inches from posterior surface of chest shows a large well-defined cavity in right upper zone. Cavities seen in anterior tomogram no longer in view. Some deformity of right bronchus.



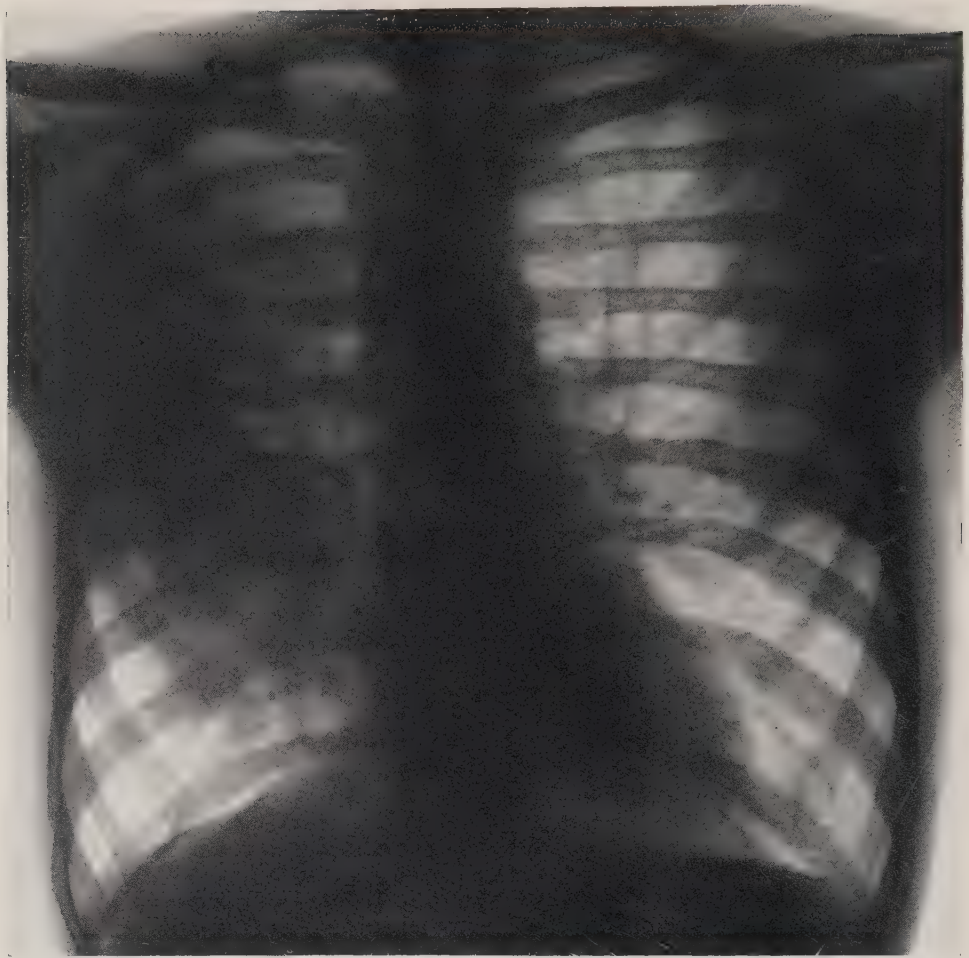
T.1(d).—Same patient. Posterior tomogram. Further cavities visible. Cavity in right upper zone now indistinct except for its posterior pole which shows as a sharply defined ring.

(Skiagrams taken at Lancaster Pulmonary Hospital).

RIGHT.

LEFT.

TOMOGRAPHY—*contd.*



T.2(a).—A.L., male, aged 26 years. T.B. minus. Skiagram shows dense opacity in right middle zone surrounded by fine mottling.



T.2(b).—Same patient. Anterior tomogram. The opacity in the right middle zone shows irregular translucent areas suggesting cavities.

(Skiagrams taken at Lancaster Pulmonary Hospital).

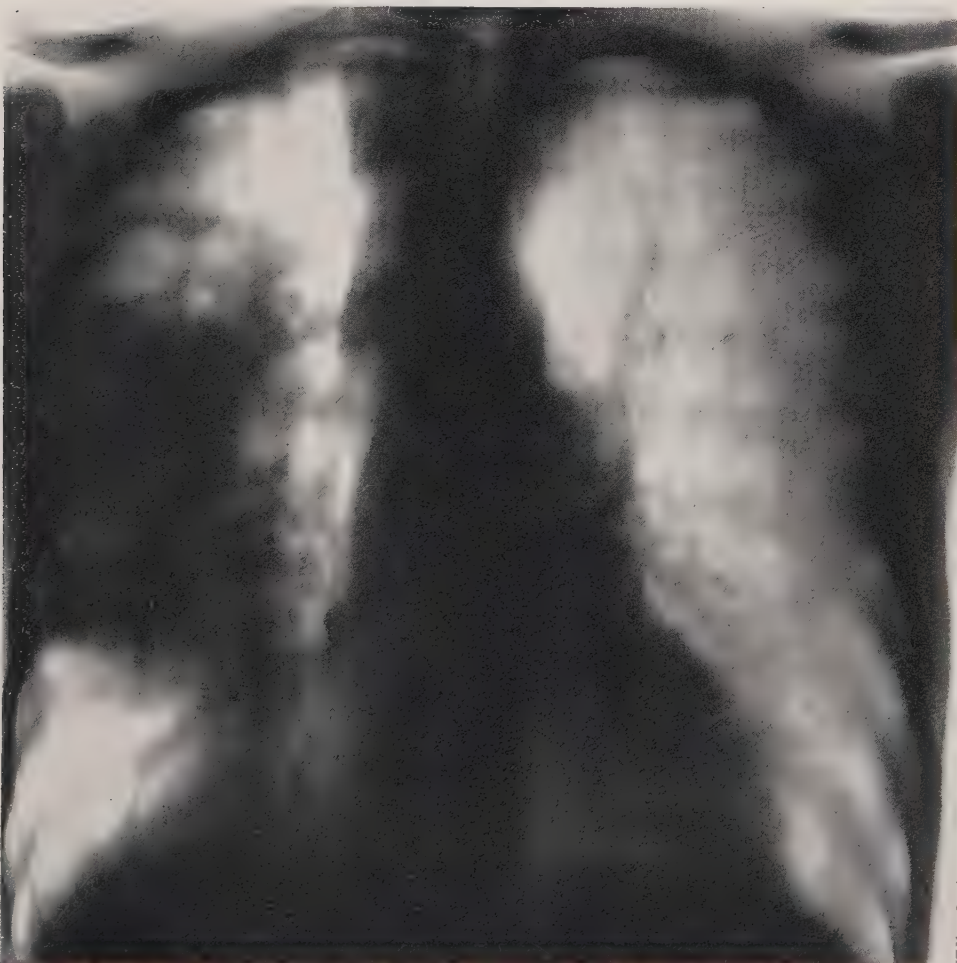
RIGHT.

LEFT.

TOMOGRAPHY—*contd.*



T.2(c).—Same patient. Median tomogram. The opacity in the right middle zone shows irregular translucent areas suggesting cavities.



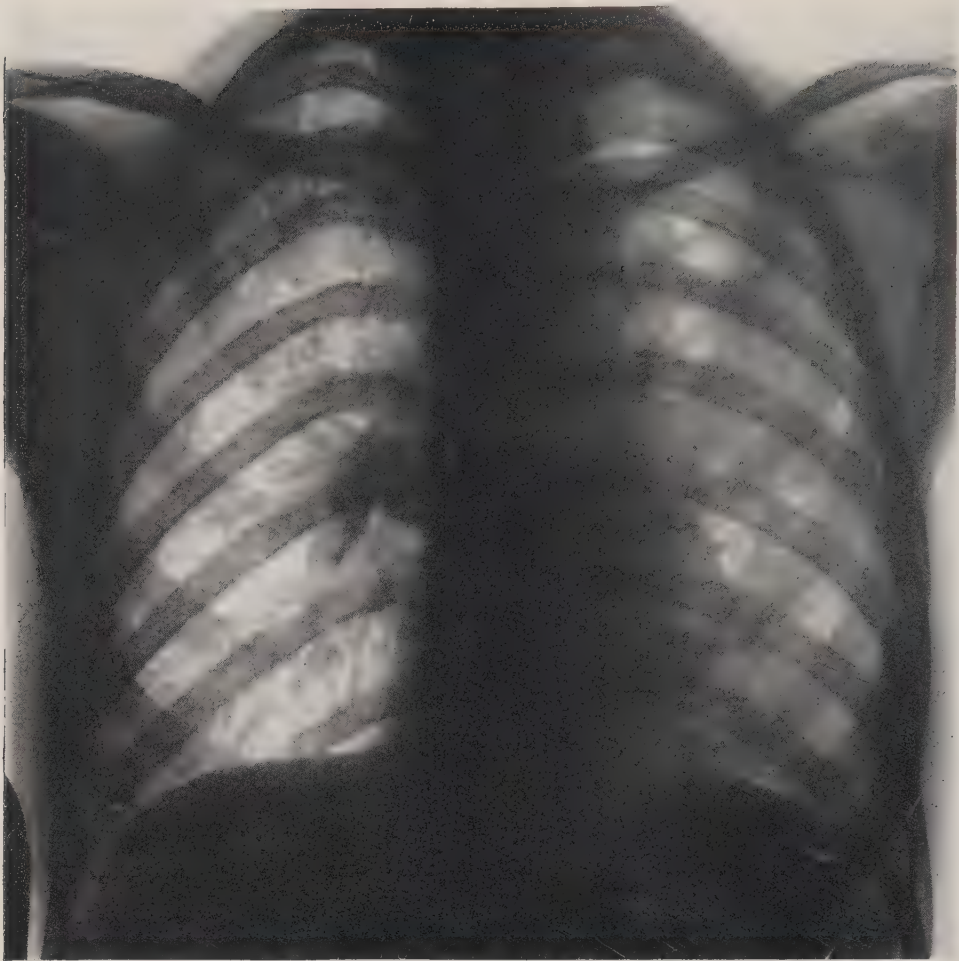
T.2(d).—Same patient. Posterior tomogram. A large irregular cavity is visible in the right middle zone towards the upper part of the opaque area.

(Skiagrams taken at Lancaster Pulmonary Hospital).

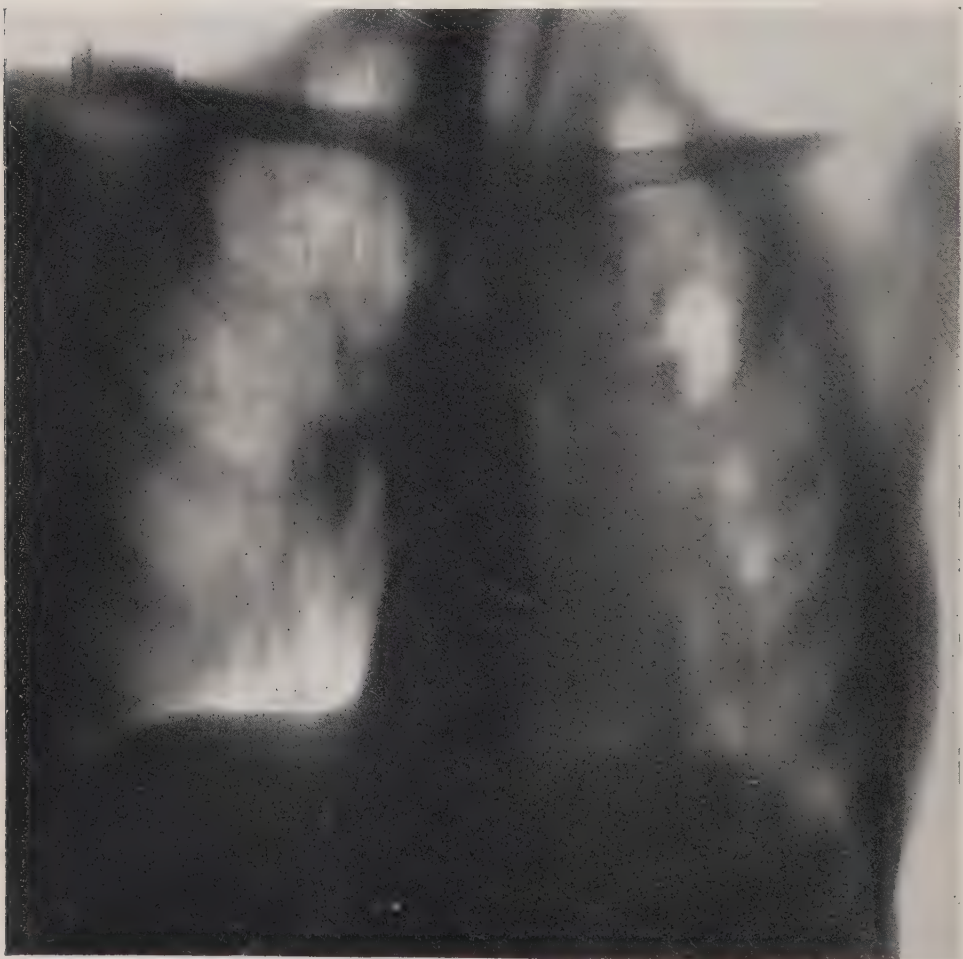
RIGHT.

LEFT.

TOMOGRAPHY—*contd.*



T.3(a).—F.T., female, aged 27 years. T.B. plus 2. Skiagram shows fine mottling in right upper and middle zones and denser general shadowing of left side with cavitation at apex.



T.3(b).—Same patient. Anterior tomogram. Irregular cavitation is visible in the left upper and middle zones.

(Skiagrams taken at Lancaster Pulmonary Hospital).

RIGHT.

LEFT.



T.3(c).—Same patient. Median tomogram. Several cavities visible on left side ; one shows a definite communication with the bronchus.



T.3(d).—Same patient. Posterior tomogram. A large cavity is visible in the left upper zone showing on its inner side a projection representing the remains of a septum between two cavities which have fused.

(Skiagrams taken at Lancaster Pulmonary Hospital).

RIGHT.

LEFT.

objects situated at a distance from the plane of best definition not exceeding the abscissa of the "heel" would be comparatively well and uniformly defined: but objects further away would be effectively blurred out of the picture.

The attainment of a curve similar to B appears to be the basic mathematical problem in the design of an efficient tomograph.

Curve A is drawn from calculations based on both the Sanitas type of tomograph and the "parallel plane" types of tomographic attachments. As regards the form of this curve, neither type of apparatus shows any advantage over the other.

In spite of the imperfections of the present forms of tomographic apparatus, the results obtainable are of definite clinical value. They aid in the detection of otherwise invisible pulmonary cavities, including those in lungs collapsed by artificial pneumothorax. They serve to delineate the bronchi with almost the clarity of lipiodol radiography, and without any inconvenience or danger to the patient. And they make it possible, at least partially, to "see through" a pleural effusion or a thickened pleura, and observe the condition of the underlying lung.

These are but a few of the advantages of tomography, and it appears probable that their number will continually increase as progress is made in the perfection of apparatus and technique.

Here inserted are skiagrams illustrating tomography.

APPENDIX.

Notes on the practical designing of a tomographic attachment.

1. Limitations are imposed by the following mechanical features of the usual forms of x-ray couches and tube-stands:—

- (a) *The distance of the film below the Bucky table.* This is usually made as small as possible in the interest of good definition. A usual distance is 2 to $2\frac{1}{2}$ inches, whereas in the Sanitas tomograph the film is about 8 inches below the table. The reduced table-film distance necessitates a comparatively high ratio of tube movement to film movement, of the order of 8 to 1. Any errors in the leverage system are magnified accordingly, and it is therefore important to make the system as mechanically perfect as possible,

- (b) *The height to which the tube can be raised above the table.* If a wide range of movement is permitted, say up to 4ft. 6ins., it will be possible to use a tomograph lever with a fixed pivot. Otherwise it may be necessary to provide two or more pivot positions to allow of varying the ratio of tube movement to film movement from about 10 : 1 to 5 : 1.
- (c) *The design of the tube carriage, with respect to the possibility of tilting the tube during its travel alongside the table.* It is evident that if the tube remains always pointing vertically downwards, whatever may be the actual displacement of the tube pillar the effective displacement is limited by the diameter of the cone of radiation emerging from the tube. It may be that this effective displacement will suffice, but much depends on the type of tube used. If the tube is to be tilted so that the central ray always points towards the centre of the film, the result will only be satisfactory if the pivot about which the tube-carriage tilts is at approximately the same horizontal level as the focal spot of the tube. If this is not the case, the focal spot will not maintain a constant height above the film during the travel of the tube pillar, and the tube-film system will cease to operate according to the parallel plane principle.
- (d) It is obviously necessary that the film carriage bearings should have the least possible play in their guides, and that the rails on which the tube pillar moves should be exactly parallel to these guides. The tube pillar may need additional support near its upper end to prevent undue oscillation during its horizontal movement.
- (e) The usual design of tube stand and Bucky couch will necessitate the taking of tomograms with the patient recumbent.

2. Once these limitations are realised and dealt with, the construction of a tomographic attachment is comparatively simple. The chief items are :

The leverage system.

The tube-tilting mechanism, if any.

The current-switching mechanism.

The details of these principal items will vary according to the mechanical features of the x-ray apparatus to which the tomographic attachment is to be fitted.

In some forms of apparatus it may be convenient to mount the switches on the Bucky carriage, while in others they may be most conveniently mounted on the edge of the table or on the floor. In one of the tomographic attachments constructed by the writer a single switch suffices, and it operates in conjunction with the tube-tilting mechanism.

Again, the lever arm may be horizontal or vertical according to which system is more easily adapted to the apparatus in use.

It is obviously impossible to describe in a few compressed notes the details of making and fitting the parts of a tomographic attachment, but the essential points have been covered in the foregoing pages. The writer will be glad to demonstrate further details to any who may be interested.

ADDENDUM.

Since compiling this article, the writer has devised an alternative form of tomographic attachment which produces two planes of sharp definition instead of one. The zone of tissue tomographed lies between the two planes. These are so spaced that each is situated at the level where definition due to the other plane is becoming useless.

It is as yet too soon to say whether the results so obtained will surpass those given by the more usual type of apparatus, but the method suggests interesting theoretical possibilities.

VI.—THE CULTURAL METHOD IN THE DIAGNOSIS OF TUBERCULOSIS.

BY J. DOBSON, M.R.C.S., L.R.C.P.

Assistant Medical Superintendent of Wrightington Hospital.

Since the first publication by Dr. Evelyn Holmes in 1934 of her investigation into the culture of the B. Tuberculosis, so many workers have testified as to its value that it has now become a standard method as an aid to the laboratory diagnosis of the disease.

Whilst most observers admit that animal inoculation is slightly more accurate, the culture method has several advantages. It is considerably less expensive, the technique is simple, a result can be obtained in a much shorter time—three weeks as compared with five weeks by animal tests—and it is always possible, should the diagnosis still be in doubt after a negative culture, to submit a specimen to animal inoculation.

During the past three years the culture method has been used at the Wrightington Hospital as a routine method of investigation of all doubtful specimens, and I think the results are sufficiently encouraging to be worth recording.

The medium which has proved the most satisfactory is the Jensen modification of the Lowenstein medium. It is manufactured for us by Research Products Ltd., 12 and 13, Henrietta Street, London, W.C.2, and is supplied in one-ounce phials fitted with Macartney's screw cap. The advantage of this type of cap is that it produces an air-tight joint, which not only keeps the medium moist, but helps to prevent contamination by secondary infection.

Specimens which are likely to be free from organisms other than tubercle bacilli, for example cerebro-spinal fluid withdrawn at lumbar puncture, are directly inoculated on the culture medium without further treatment. In the presence of contaminating organisms the following method is employed :—The specimen is mixed with twice its volume of 4 per cent. NaOH and agitated until no solid particles remain. The liquid is then incubated for 30 minutes at a temperature of 37·4° C., and after incubation centrifuged for 10 minutes. The supernatant clear fluid is then discarded and the residue neutralised with 8 per cent. HCl against litmus and inoculated by means of a glass pipette on the culture medium.

Two culture tubes from each specimen are incubated for three weeks at a temperature of 37.4°C . All apparatus such as centrifuge tubes, glass pipettes, etc., must be sterilised by boiling before use. Even with this careful technique a certain number of cultures will be spoilt by secondary infection—in our series 10.4 per cent.

Certain points in the collecting of specimens are of importance; sputa and urine are collected over a period of 24 hours, and in the case of pus, that obtained at the first aspiration is the most likely to prove positive. When the specimen is bulky, *e.g.*, sputum and urine, it is first centrifuged, and only the deposit treated with the caustic soda.

All cultures are first examined at the end of 24 hours. This is essential as the screw-caps tend to become loosened by the heat, and also any secondary infection will generally be showing by that time. If satisfactory, the cultures are left for three weeks and again examined.

Although positive cultures are fairly characteristic, films are made from them as a routine and examined after staining by the Ziehl-Neelsen method. If no growth is visible at the end of three weeks the tubes are incubated for a further three weeks. An absence of growth at the end of that time is counted as a negative result.

A random selection of positive cultures has been submitted to animal inoculation. In no instance has a diagnosis based upon the morphological and cultural characters of a strain proved wrong after animal inoculation.

Certain observers have stressed the value of differentiation between human and bovine types by the culture method.

So far we have not obtained any positive bovine cultures upon the Lowenstein medium although subcultures from known strains of the bovine bacillus have grown freely. It is possible; however, that a percentage of our negative results, especially from pus, may have been from cases of bovine infection.

RESULTS.

Compared with other observers our figures at Wrightington are small, but I think that they are large enough to be of some value. Two hundred and forty specimens have been cultured, and of these 79, or 32.9 per cent., have been positive. Twenty-five, or 10.4 per cent.,

have been spoilt by secondary infection. The specimens have consisted of sputum, pus, urine, and cerebro-spinal fluid. The following Table 9 gives the results in detail :—

Type of material.	Number of cultures made.	Results.		
		Positive.	Negative.	% Positive.
Sputum	84	15	69	17·84
Pus	95	43	52	45·25
Urine	51	14	37	27·44
Cerebro-spinal fluid	10	7	3	70·00
Total	240	79	161	32·91

Sputum.—Most of the specimens of sputum have come from the Wigan County Dispensary, and all have been persistently negative after ordinary slide examination. In many of these specimens the colonies appearing were few in number.

Pus.—All the specimens of pus put down for culture have been negative on microscopical examination. Many in which sinus formation has occurred have been heavily secondarily infected, but in spite of this a high percentage of positive results has been obtained.

Urine.—Owing to the very scanty deposit in many of the specimens submitted for examination, animal inoculation has been relied upon more than culture as an aid to diagnosis. According to Tytler, Edwards and Trayer, culture is superior for all types of specimens, except urine.* A small number (11) have been submitted to both culture and animal inoculation. A comparison of the results obtained is given below, from which it will be seen that animal inoculation is, on the whole, the more reliable :—

Culture positive, guinea-pig positive	2
„ positive, „ negative	1
„ negative, „ positive	3
„ negative, „ negative	5

Cerebro-spinal Fluid.—Owing to the scanty material obtained no specimen was examined microscopically before culture. Of three negative results, the patients recovered in two cases (presumably not

*The Demonstration of Tubercle Bacilli in Sputum. Joint Tuberculosis Council, p.29.

cases of tuberculous meningitis). The diagnosis in the third case, however, was proved at post-mortem examination to be tubercular.

In conclusion, the following cases illustrate the value of the culture method as an aid to diagnosis :—

Case 1.—A.B., male, aged 18, was admitted to hospital with a sub-acute arthritis of the left hip, ?tuberculous. Clinical examination did not show the typical signs of a tuberculous arthritis. X-ray examination showed considerable decalcification of the bones, but the articular surfaces were not eroded. The case was thought to be one of septic arthritis, and the patient was immobilised on weight extension. Later he developed an abscess over the lateral aspect of the joint. This was aspirated. The pus was negative for T.B. on microscopy but the culture was positive.

Case 2.—O.D., male, aged 29, was admitted to hospital complaining of persistent cough and sputum, intermittent abdominal pain, and low back-ache on walking. Three years previously he had pneumonia, and four months before admission had been operated upon for hydatid cysts. Examination showed dullness and absent breath sounds at the right base and a few crepitations in the right mid-zone. The sputum was negative on admission and had previously been persistently negative. The spine showed no deformity but there was marked tenderness over the 3rd lumbar vertebra. X-ray examination of the chest showed the heart pushed over to the left. On the right side in the lower zone there was a homogeneous opacity with a fairly well defined upper border. The lower part of the opacity was merged into the shadow cast by the liver. ??Hydatid of lung or liver. X-ray of the spine showed some erosion of the adjacent surfaces of the 2nd and 3rd lumbar vertebrae, but the picture was not typical of tubercle. Casoni's test for hydatids was negative. The chest was explored with a needle and 400 c.c. of pus were obtained. This proved to be tubercle positive on culture.

VII.—NOTIFICATION AND NON-NOTIFICATION OF TUBERCULOSIS CASES.

Statutory notifications are made under the Public Health (Tuberculosis) Regulations, 1930, which came into force on 1st January, 1931. These regulations consolidate the regulations issued in 1912, 1921 and 1924, and they also include several minor amendments of an administrative nature.

It is the statutory duty of every medical practitioner to notify within 48 hours to the local medical officer of health any case of tuberculosis occurring in his practice, and the medical officer of health is charged with the duty of keeping a corrected register of such cases reported in his district.

Early in 1937 the records of notifications and returns from local medical officers of health were transferred from the Public Health Department to the Tuberculosis Department, where all the administrative work in connection with the notification of tuberculosis cases is now done.

According to the quarterly returns of the local medical officers of health, there were on the registers of the 109 County districts on the 1st January, 1937, 11,602 cases of tuberculosis compared with 7,402 on the dispensary registers—a difference of 4,200. Since February, 1937, as opportunity has permitted, these registers have been compared with the records of the Tuberculosis Department and the necessary corrections made to bring them up-to-date. As registers are amended, steps are taken to ensure that the local medical officers of health submit correct quarterly statements. The result of these investigations has been to reduce the gross disparity of 4,200 mentioned above to 1,774 on the 31st December, 1937, and to 548 on the 30th June, 1938. Part of the difference of 548 is made up by tuberculous patients—about 150—in mental hospitals and other public institutions whose names do not appear on the dispensary registers as they are not normal cases to come under the County scheme.

The following Table 10 shows the number of notifications received in the Administrative County during 1937 :—

	Children.		Adults.		Total.
	Males	Females.	Males.	Females.	
Pulmonary tuberculosis	26	25	687	576	1,314
Non-pulmonary tuberculosis	200	178	155	212	745
Tuberculosis (all forms)	226	203	842	788	2,059

Tables B and C (Appendix II) analyse the notifications received during 1937 according to sex, age, and part affected.

Table D (Appendix II) gives the number of pulmonary and non-pulmonary notifications received during the years 1917 to 1937 in age-groups and sex.

TOTAL " KNOWN SOURCES OF POSSIBLE INFECTION."

One effect of the better notification of cases by practitioners has been to add to the number of new cases in recent years and statistically to make the figures disadvantageously comparable with the earlier years when a larger number of cases escaped notification.

It is, however, possible to obtain a truer record of the number of new cases of pulmonary tuberculosis occurring year by year by adding together (a) the notifications and (b) the deaths which occurred without notification being made during life ; this total gives clearly the number of known sources of possible infection as Table 1 on page 2 shows.

NON-NOTIFICATION.

Pulmonary tuberculosis.

For measures dealing with tuberculosis to be successful, it will be generally agreed that an accurate and complete knowledge of all the existing cases is required. If cases only become known through the death certificate, control of the spread of infection cannot be effective.

I have continued to direct special attention to the notification of cases of tuberculosis, and have engaged in correspondence with medical practitioners, medical officers of health, and medical superintendents over many individual cases.

The extent of non-notification of pulmonary cases in the Administrative County from 1918 onwards is shown in the following Table 11 :—

Period.	Number of deaths from pulmonary tuberculosis recorded.	Deaths not notified under the Regulations during life.	
		Number.	Percentage to pulmonary deaths.
1918-20 (average)	1,438	233	16·2
1921-23 (average)	1,304	108	8·2
1924-26 (average)	1,192	63	5·2
1927-29 (average)	1,091	57	5·2
1930-32 (average)	1,014	48	4·7
1933-35 (average)	904	38	4·2
1936	856	46	5·3
1937	865	40*	4·6*

*Of the 40 deaths in 1937 which escaped statutory notification as tuberculous cases during life, it should be stated that 6 were known to the tuberculosis officer and 8 died in public institutions. If these 14 deaths which were known otherwise than by the official primary notification under the Regulations be deducted, then the percentage of 4·6 *non-notified fatal cases would be reduced to 3·0, which figure may be taken as the real extent of missed notifications resulting in cases escaping supervision by the health authorities.* The results of a special enquiry into the non-notified fatal cases in 1937 are given on page 36.

The improvement which has been secured during the past 20 years in the notification of cases of pulmonary tuberculosis before death would not have been practicable without the cordial co-operation of the local medical officers of health and, of course, the general practitioners who make the notifications.

There is no doubt that in this Administrative County a much smaller proportion of cases of pulmonary tuberculosis escapes notification than is frequently the experience in other parts of the country. Thus, we have a smaller proportion of unknown cases or unknown sources of infection remaining outside the measures for the control of tuberculosis.

Non-pulmonary tuberculosis.

In the following Table 12 is given the number of non-notified fatal cases of non-pulmonary tuberculosis in the Administrative County since the year 1918 :—

Period.	Number of deaths from non-pulmonary tuberculosis recorded.	Deaths not notified under the Regulations during life.	
		Number.	Percentage to non-pulmonary deaths.
1918-20 (average)	396	121	30·5
1921-23 (average)	392	84	21·4
1924-26 (average)	328	51	15·5
1927-29 (average)	287	51	17·7
1930-32 (average)	252	46	18·2
1933-35 (average)	217	36	16·5
1936	192	24	12·5
1937	198	30	15·1

In 1937, 21 of the non-notified deaths from non-pulmonary tuberculosis occurred in public institutions. Meningitis accounted for 17 of the 30 deaths. This acute illness often lasts but few days—and may be only verified as to cause at a post-mortem—so that very little time remains for statutory notification.

SPECIAL ENQUIRY INTO NON-NOTIFIED FATAL CASES.

Commencing in October, 1920, special investigations have been carried out in regard to every individual death recorded in the Administrative County which had not been previously notified. The procedure followed has been to examine the names of persons dying from tuberculosis given in the weekly returns of deaths sent, by arrangement, to the Tuberculosis Department by the district registrars. The names are compared with the notification register, and the death of every person not previously reported as a case under the Public Health (Tuberculosis) Regulations is enquired into ; information as to the circumstances attending non-notification is obtained from the tuberculosis officer and, if necessary, the medical attendant.

In 1937, there were 70 such deaths, and the enquiry for that year gave the following important results :—

(1) That 29 (8 pulmonary, 21 non-pulmonary) of the 70 deaths in 1937 occurred in public institutions.

(2) That of the remaining 41 deaths, the circumstances of non-notification were as stated in the following Table 13 :—

	Period 1st January to 31st December, 1937.		
	Pul- monary.	Non-pul- monary.	Total.
Doctor in attendance shortly before death—			
1 week or less	2	—	2
2 to 3 weeks	1	—	1
Complicated cases, presenting difficulty in diagnosis.....	1	1	2
Misinterpretation of Tuberculosis Regulations and notification believed to be unnecessary—			
Cases previously notified in another area	5	4	9
Cases known to tuberculosis officers—con- siderable doubt as to diagnosis in some of these cases	6	—	6
No doctor in attendance	10	1	11
Attended by more than one doctor, and notification believed to have been made by first practitioner	2	1	3
No apparent reason for non-notification	3	—	3
	30	7	37
Tuberculosis not primary cause of death	2	2	4
TOTAL	32	9	41

3. *This table shows that in only 3 of the 41 deaths was there no reasonable excuse for non-notification.*

The efficiency of notification in England varies directly with the efficiency of the county council or county borough scheme dealing with tuberculosis. If there is no really comprehensive scheme, if there are poor and newly qualified, part-time, and badly paid tuberculosis officers, if there are insufficient means for expert diagnosis, and too few beds for treatment, then a high proportion of non-notified fatal cases will be the rule and not the exception.

PERIOD BETWEEN DATE OF CASE NOTIFICATION AND DEATH.

The list of the 1,062 persons dying from tuberculosis in the Administrative County during 1937 has been compared with the notification

register, and the following Table 14 has been compiled to show the period that elapsed between the date of case notification and the date of death :—

Period between date of case notification and date of death.	Cause of death.				Total deaths.
	Pulmonary tuberculosis.		Non-pulmonary tuberculosis.		
	Number.	%	Number.	%	
Under 1 week	55	14.9	42	50.4	97
1 to 2 weeks.....	20		8		28
2 to 3 weeks.....	20		5		25
3 to 4 weeks.....	25		6		31
1 to 2 months	70	13.6	6	9.9	76
2 to 3 months	40		6		46
3 to 6 months	79	9.8	7	5.8	86
6 to 12 months	89	11.0	7	5.8	96
Total under 1 year	398	49.3	87	71.9	485
1 to 2 years	120	14.9	6	4.9	126
2 to 3 years	67	8.3	4	3.3	71
3 to 4 years	52	6.4	3	2.5	55
4 to 5 years	36	4.5	3	2.5	39
5 to 6 years	22	2.7	1	0.8	23
6 to 7 years	20	2.5	5	4.1	25
7 to 8 years	16	1.9	4	3.3	20
8 to 9 years	13	1.6	1	0.8	14
9 to 10 years	10	1.2	—	—	10
10 to 15 years	25	3.1	3	2.5	28
15 to 20 years	22	2.7	4	3.3	26
20 years and over.....	7	0.9	—	—	7
Total	808	100.0	121	100.0	929
Not notified under the Regulations during life :—					
Death occurred outside County area	29	—	34	—	63
Death occurred in County area	40	—	30	—	70
Total number of deaths	877	—	185	—	1,062

N.B.—The analysis of the 1,062 deaths has been made in the Tuberculosis Department from information obtained week by week from the 70 district registrars plus the quarterly returns of transferable deaths from the Registrar-General. The totals in the table differ very slightly from the official totals of tuberculosis deaths reported at the end of the year by the Registrar-General.

The table shows that of the deaths from pulmonary tuberculosis occurring in 1937 almost half had been notified for the first time in life as suffering from tuberculosis within 12 months of death. The remaining pulmonary deaths regularly declining had been notified at periods up to 10 years, when the numbers became too small to draw conclusions.

For the deaths from non-pulmonary tuberculosis, it will be seen that half had been notified only within four weeks of death and 72 per cent. within one year of death.

The conclusion to be drawn from the table is that for both pulmonary and non-pulmonary tuberculosis the most fatal period is within 12 months of notification.

VIII.—APPLICATIONS FOR TREATMENT.

All statutorily notified cases do not come under the tuberculosis scheme. For instance, tuberculous patients in mental hospitals are treated in such hospitals, and are not on the dispensary registers. The tuberculosis officer assists occasionally in diagnosis at mental hospitals ; it may be that even more co-operation between the two services would be beneficial. Again, a small proportion of cases are in very good financial circumstances, and prefer to arrange and pay for their own treatment. Another small proportion consists of persons who have delayed consulting their doctors until they are in the last stage of the disease and for whom treatment under the scheme for the few days before death is of no use.

During 1937, there were 2,059 cases notified under the Public Health (Tuberculosis) Regulations as suffering from tuberculosis (all forms), whereas the number of persons who applied for treatment to the County Council was 1,876, equal to 91 per cent. of the notifications.

Application is in the simplest form, consisting of a declaration as to residential qualification, particulars of membership in approved society (if any) under the National Health Insurance, name, age and address. Treatment under the scheme is not compulsory on a patient, and is provided without charge.

Table 15 below shows the number of "new" patients (1,876) who applied for treatment under the County scheme during the year 1937 :—

	Number of applications received during 1937.	Diagnosis of new applicants for treatment.			
		Pulmonary tuberculosis.	Pulmonary and non-pulmonary tuberculosis.	Non-pulmonary tuberculosis.	Diagnosis not confirmed (non-tuberculous).
Men	745	574	23	143	5
Women	735	517	14	200	4
Boys	205	19	1	184	1
Girls	191	27	4	156	4
TOTAL	1,876	1,137	42	683	14

Applications received in previous years were :—1918-22 average, 2,255 ; 1923-27 average, 2,258 ; 1928-32 average, 1,989 ; 1933, 1,920 ; 1934, 1,820 ; 1935, 1,725 ; 1936, 1,771 ; compared with 1937, 1,876. Thus there were 105 more applications in 1937 than in the previous year.

CLASSIFICATION OF NEW PATIENTS.

(a) Pulmonary tuberculosis.

During 1937, applications for treatment were received from 1,179 new patients suffering from pulmonary tuberculosis, and these were reported by the tuberculosis officers to be in the undermentioned stages of the disease on the first examination :—

T.B. minus (sputum negative or absent)	456 or 38·7 per cent.
T.B. plus 1 (early cases, sputum positive)	70 or 5·9 per cent.
T.B. plus 2 (intermediate cases, sputum positive)	511 or 43·3 per cent.
T.B. plus 3 (advanced cases, sputum positive)	142 or 12·0 per cent.

It is well known that, throughout the country, tuberculosis officers do not see many of the new cases in the early stage of the disease. Some patients through ignorance, others on account of economic reasons, neglect to consult a doctor when in the early stage, and so lessen their chance of recovery. In the Administrative County we have for several years made special investigations into the reasons underlying such disastrous delay on the part of patients. These investigations have been continued in 1937, yielding the following conclusions which correspond closely with those published in previous reports :—

1.—Altogether 74·6 per cent. of the 142 advanced cases either had no doctor or had only been attending their doctor for less than two months when first examined by the tuberculosis officer or notified. The corresponding percentage in 1936 was 74·0.

2.—After making allowance for a percentage of fulminating cases (“galloping consumption”) a large proportion—three-fourths—of patients had felt ill for one or more months before consulting a doctor.

3.—The reason for late notification and patients delaying their application until in an advanced stage of the disease is chiefly the disinclination or unwillingness of the patients to report themselves to their doctor when feeling ill. This is due mainly to the insidious onset of the disease, the discomfort being only slight at first.

4.—The time-lag on the part of the family doctors in referring cases to the tuberculosis officer has happily been reduced in recent years. There is still room for considerable improvement, see Chapter II, pages 5 to 8, dealing specially with this matter.

5.—The initiative to seek medical advice when ill rests with the patient himself. Education of the public, especially children, in hygiene is one and perhaps the most practicable method whereby prompt treatment will be applied.

In previous reports I have mentioned the teaching of hygiene to the older children at school, a matter which has been brought to the notice of the Director of Education for the County.

The tuberculosis medical staff have to depend very largely on the general practitioners throughout the County for bringing forward tuberculous patients, and it is satisfactory to note that 92 per cent. of new cases (excluding contacts) are sent *before notification* to the tuberculosis officers for an opinion as to diagnosis. Too much importance

is still laid by some doctors on sputum examinations alone, and occasionally too long a time is allowed to elapse in order that the sputum may be tested ; or steps are not taken to report the case until it is returned as “ positive.”

(b) *Non-pulmonary tuberculosis.*

There were 683 new cases diagnosed by the tuberculosis officers as suffering from non-pulmonary tuberculosis in the following forms :—

Bones, joints and spine				149	} 683
Abdomen	.....	.....	.....	76	
Other organs	.....	.....	.....	54	
Peripheral glands	.....	.....	.....	375	
Skin	.....	.....	.....	29	

In 1936 the number of applications from non-pulmonary cases was 643.

IX.—THE DISPENSARY ORGANISATION.

A tuberculosis dispensary should be the centre of activity, for a town or district, in regard to measures for the prevention of the disease, the expert examination and diagnosis of cases, together with the supervision, special treatment, and care of all known tuberculous persons.

For dispensary purposes, the Administrative County is divided into five large areas, average population 324,000, and three small areas (see folding Table A, page 55).

Each large area is in the charge of a consultant tuberculosis officer, and to help the consultant there are two assistant tuberculosis officers, four to seven tuberculosis health visitors, and a clerical staff of two. In each area there is a chief dispensary, and two or more branch dispensaries; at the chief dispensary is co-ordinated the whole of the work required in that particular area. The County Council have provided in each of these large areas a sanatorium-hospital containing up to 57 beds for the treatment and isolation of patients near their homes. The consultant tuberculosis officer of the particular dispensary area acts as the visiting medical superintendent.

The three small dispensary areas—Furness, Fylde and Wigan County—are in the charge respectively of the medical superintendent of the High Carley Sanatorium (130 beds for pulmonary tuberculosis), the Elswick Sanatorium (70 beds for pulmonary tuberculosis), and the Wrightington Hospital (226 beds for non-pulmonary tuberculosis and combined cases). These small areas are each equipped with one dispensary, and have one, or two, tuberculosis health visitors; the clerical work is done in the office of the institution.

Thus, the dispensary side of the work is not divorced from the institutional side, or *vice versa*.

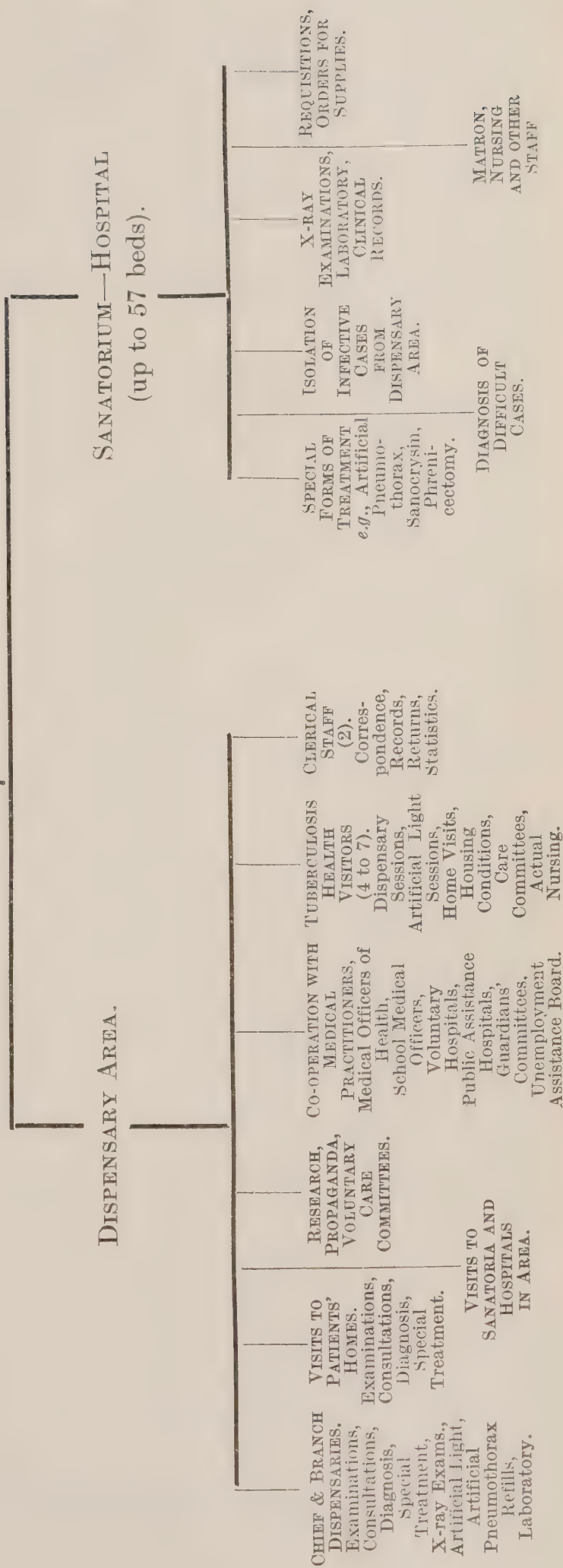
The chart opposite illustrates the organisation and work of one of the five large dispensary areas in the Administrative County.

The duties of a consultant tuberculosis officer will, therefore, include in any week the holding of dispensary sessions for diagnosis and advice as to treatment; visitation, in consultation with the medical

Chart illustrating the organisation and work of one of the five large dispensary areas in the County. The scheme generally is under the control of the Central Tuberculosis Officer acting for the County Tuberculosis Committee.

CONSULTANT TUBERCULOSIS OFFICER
in charge of a large dispensary area (average population 324,000).

TWO ASSISTANT TUBERCULOSIS OFFICERS.



attendant, of patients in their homes for diagnosis and advice as to treatment ; examination of patients undergoing artificial light treatment at the dispensary centre ; holding of sessions at the dispensary for x-ray examinations ; continuation of artificial pneumothorax treatment ; visitation of the sanatorium-hospital on four or five days per week for routine and special treatment, and administration ; attendance at meetings of voluntary care committees ; arrangement of work with the two assistant tuberculosis officers, the tuberculosis health visitors and the clerical staff.

The work done through the dispensary organisation during the year 1937 is dealt with further in Chapter X.

X.—SUMMARY OF WORK DONE THROUGH THE DISPENSARY ORGANISATION.

CASES UNDER SUPERVISION.

On the 31st December, 1937, there were on the dispensary registers the following numbers of cases :—

	Males.	Females.	Total.
Pulmonary tuberculosis :			
Under 15 years of age	81	75	156
15 years and over	2,256	1,868	4,124
Non-pulmonary tuberculosis :			
Under 15 years of age	700	576	1,276
15 years and over	795	1,016	1,811
TOTAL PATIENTS ON DISPENSARY REGISTERS.....	<u>3,832</u>	<u>3,535</u>	<u>7,367</u>
Doubtful cases (diagnosis not determined)			38

On the estimated population of the Administrative County, namely, 1,859,200, the 7,367 cases represent an incidence of 3·96 per 1,000.

The medical classification* of the 7,367 patients was as under :—

	Disease active.	Disease quiescent.	Total.
Pulmonary tuberculosis :			
T.B. minus	615	885	1,500
T.B. plus 1	342	299	641
T.B. plus 2	1,442	463	1,905
T.B. plus 3	197	37	234
Total	<u>2,596</u>	<u>1,684</u>	<u>4,280</u>
Non-pulmonary tuberculosis :			
Bones and joints	275	306	581
Spine	147	136	283
Abdomen	83	191	274
Other organs	87	83	170
Peripheral glands	471	990	1,461
Skin	226	92	318
Total	<u>1,289</u>	<u>1,798</u>	<u>3,087</u>
TOTAL PULMONARY AND NON-PULMONARY	<u>3,885</u>	<u>3,482</u>	<u>7,367</u>

*Classification in accordance with Memorandum 37/T (Revised) issued by the Ministry of Health in October, 1930. See Appendix X for definitions.

The following table shows the dispensary work done in the Administrative County of Lancaster during 1937, compared with all counties in England, and England and Wales :—

TABLE 16.—*Dispensary Work done during 1937 in Lancashire, all Counties in England, and England and Wales, calculated per 100 Deaths from Tuberculosis.*

	Ratio per 100 deaths from tuberculosis		
	Lancashire.	All counties in England.*	England and Wales.
Number of new cases and new contacts examined :			
New cases Children	92	100	99
Adults	360	271	290
New contacts Children	45	92	95
Adults	51	69	82
Total new cases and new contacts examined	548	532	566
Number of new cases and new contacts diagnosed as suffering from :			
Pulmonary tuberculosis Children	5	7	8
Adults	100	101	105
Non-pulmonary tuberculosis Children	31	20	17
Adults	30	17	15
Total new cases and new contacts diagnosed as suffering from tuberculosis	166	145	145
Number of sputum examinations	575	393	461
Number of x-ray examinations	1,043	464	568
Number of consultations :			
Personal	56	102	85
Other	642	483	538
Number of home visits by tuberculosis officers	435	423	309
Number of home visits by tuberculosis health visitors	3,902	2,569	2,812
Number of patients' dispensary attendances	2,418	2,210	2,879
Number of patients on the dispensary registers at the end of the year :			
Pulmonary tuberculosis Children	15	46	58
Adults	388	425	428
Non-pulmonary tuberculosis Children	120	105	95
Adults	170	87	80
Total patients on the dispensary registers	693	663	661
Number of T.B. plus cases on the dispensary registers at the end of the year	262	247	249
Number of cases remaining undiagnosed at the end of the year	4	26	44
Number of cases removed from the dispensary registers as recovered	68	52	47
Number of recovered cases restored to the dispensary registers.....	5	2	2

* Excluding London.

A further detailed analysis (including age-groups) of the number of tuberculous cases on the dispensary registers is given in Appendix III, from which the following proportions have been calculated :—

(a) PULMONARY TUBERCULOSIS.		Per 1,000 of child population (0 to 15).	Per 1,000 of adult population (15 and over).
Total number of cases of pulmonary tuberculosis per 1,000 of the population	.....		2.30
Number of <i>active</i> cases per 1,000 of the population	.....		1.39
Number of <i>quiescent</i> cases per 1,000 of the population	.....		0.90
Number of <i>T.B. plus</i> cases—children	.....	0.05	
adults	.....		1.89
Number of <i>T.B. minus</i> cases—children	.....	0.32	
adults	.....		0.94
Of the total cases of pulmonary tuberculosis 3.64 per cent. were children under 15 years of age.			

(b) NON-PULMONARY TUBERCULOSIS.			
Total number of cases of non-pulmonary tuberculosis per 1,000 of the population	.....		1.66
Number of <i>active</i> cases—children	.....	1.24	
adults	.....		0.54
Number of <i>quiescent</i> cases—children	.....	1.91	
adults	.....		0.70
Number of cases, divided according to the part affected :—			
Bones, joints and spine—children	.....	0.77	
adults	.....		0.37
Abdomen—children	.....	0.27	
adults	.....		0.11
Peripheral glands—children	.....	2.01	
adults	.....		0.44
Skin—children	.....	0.07	
adults	.....		0.19
Other organs—children	.....	0.01	
adults	.....		0.11

The foregoing proportions show the main factors in the incidence of tuberculosis, and if other authorities published similar information valuable comparisons could be made.

X-RAY EXAMINATIONS.

An x-ray plant for the use of the consultant tuberculosis officer is provided at one of the dispensaries in each of the five large areas. In the small areas, namely, Furness, Fylde, and Wigan County, the x-ray work is carried out at the respective institutions of which the consultant tuberculosis officer is also medical superintendent—High Carley, Elswick and Wroughtington.

In July, 1937, a new plant was installed at the Accrington Chief Dispensary to replace the apparatus transferred to the Withnell Pulmonary Hospital.

The following statement shows the x-ray work done at County dispensaries, sanatoria and hospitals during 1937 compared with several previous years :—

TABLE 17.

	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.
Dispensary patients:								
Skiagrams	5,676	6,045	6,336	6,457	6,729	6,560	6,998	7,826
Screenings	854	1,417	2,163	2,638	3,408	3,464	3,471	3,265
Institution patients:								
Skiagrams	2,162	2,458	3,763	3,779	3,914	4,371	4,799	5,417
Screenings	2,012	2,988	3,418	4,147	4,426	4,857	5,006	5,616
Total	10,704	12,908	15,680	17,021	18,477	19,252	20,274	22,124

The greater amount of artificial pneumothorax treatment for which radiological control is necessary accounts mainly for the increasing number of x-ray examinations.

The policy of placing an apparatus in each dispensary area for use by the consultant tuberculosis officer and his staff is, from experience, found to be the best method, because the tuberculosis officer, with his knowledge of the patient's history and clinical signs, is most fitted to make a correct interpretation of the skiagrams.

HOUSING.

Housing conditions are known to be a most important factor in the spread of pulmonary tuberculosis, and the tuberculosis officers and the tuberculosis health visitors make every effort to secure that patients in an infective state occupy a separate bedroom, or at least a separate bed. To enable this to be done, bedsteads and mattresses are kept in stock at the dispensaries and are available for loan to patients otherwise unable to provide a separate bed. From care funds, necessitous cases are assisted to purchase the necessary bed clothes.

Copies of all reports by the tuberculosis health visitors on the detailed environmental conditions of a patient are forwarded to the appropriate medical officer of health.

Every instance of unsatisfactory housing is considered on its merits by the tuberculosis officer concerned, who, when the circumstances indicate, supports an application from the patient to the local authority for removal to a new house.

In a certain number of cases where the home conditions cannot be improved, and particularly when there are children in the home, the patient is removed to a County pulmonary hospital for isolation.

Power exists under Section 172 of the Public Health Act, 1936 (which came into operation on the 1st October, 1937), to secure the compulsory isolation of an infectious case on the order of the magistrates subject to the following conditions :—

“That the lodging or accommodation provided for that person is such that proper precautions to prevent the spread of infection cannot be taken, or that such precautions are not being taken.

“That serious risk of infection is thereby caused to other persons.

“That a suitable hospital or institution exists for the reception and accommodation of that person.”

So far, it has only been necessary for one County patient to be so dealt with, as satisfactory results are obtained by methods of persuasion. It must be borne in mind that all patients are instructed when at home and at institutions in the measures to take to prevent the spread of infection.

The following table shows the housing conditions of all patients under treatment or supervision at the end of 1937. Whilst every effort is made to secure that infectious cases occupy a separate room, or at least a separate bed, no useful purpose is served by the same insistence in regard to patients with the disease quiescent or arrested. The non-pulmonary cases are given separately, and only a very small number indeed may be considered infectious.

TABLE 18.—*Housing statistics of 7,367 County patients.*

	Pulmonary cases considered infectious.		Pulmonary cases considered not infectious.		Non-pulmonary cases.	
	Under 15 years of age.	15 years and over.	Under 15 years of age.	15 years and over.	Under 15 years of age.	15 years and over.
Patients occupying a separate bedroom	9	1,338	36	1,165	323	653
Patients occupying a separate bed, but not a separate bedroom	11	458	54	415	511	338
Patients not occupying a separate bed	—	67*	46	681	442	820
TOTAL	20	1,863	136	2,261	1,276	1,811

* 11 of these 67 cases were isolated in sanatoria or pulmonary hospitals at the end of 1937.

It will be seen that 67 patients suffering from pulmonary tuberculosis and considered to be infectious were not occupying a separate bed when at home at the time the census of the housing conditions was taken at the end of 1937. Of this number, 11 were away from home and isolated in pulmonary hospitals or sanatoria, leaving (from a total of 1,883 infectious cases) 56, or 2·9 per cent., infectious cases at home not occupying a separate bed. The percentage in 1936 was 3·2.

Appendix IV of this report shows the housing conditions of the patients in each dispensary area.

EXAMINATION OF HOUSE CONTACTS.

By the systematic examination of house contacts of tuberculous cases, particularly the contacts of patients with positive sputum, many early or unsuspected cases of tuberculosis are detected. Owing to indifference or unwillingness, considerable difficulty—which, however, is gradually being overcome—is experienced in persuading contacts to come to the dispensary for examination, or even to submit themselves for examination at all.

By direction of the Ministry of Health, Memorandum 37/T (Revised), cases are regarded as contacts only if the cause of their being examined is the fact that they have recently been, or still are, living in contact with some dispensary patient or other notified case; many persons suffering, or suspected to be suffering, from tuberculosis who attend at the dispensary of their own accord, or who are referred by a private medical practitioner, may give a history of previous contact with a known case of tuberculosis, but this does not bring them within the definition of “contacts.”

The following Table 19 shows the number of new contacts, which have been examined in the Administrative County during 1937 :—

	Diagnosed as tuberculous.		Doubtful.	Non-tuberculous.	Total.
	Pulmonary.	Non-pulmonary.			
Examined at home	1	2	—	41	44
Examined at dispensary	26	10	5	945	986
Total	27	12	5	986	1,030
	39				

Of the 1,030 new contacts examined during the year, 39 were ultimately diagnosed as definite cases of tuberculosis—pulmonary 27, and non-pulmonary 12. These cases are equal to 37·86 per 1,000 of contacts examined, as against the proportion of 3·96 tuberculous persons, per 1,000 of the population, known to the dispensary staff in the County. Thus, the examination of selected contacts revealed many more tuberculous cases proportionately than would be found in the ordinary population.

It may be stated that of the 27 pulmonary cases, 9, or 33 per cent., were found to have positive sputum.

Co-operation takes place between the tuberculosis medical staff and the school medical officers. The latter refer doubtful or suspicious cases to the tuberculosis officer; on the other hand the tuberculosis officer reports confidentially to the school medical officer the name of any school child who was or is actually in contact (*i.e.*, living in the same house) with an adult infectious case of pulmonary tuberculosis. The school medical officer is then able to take what action he considers desirable in regard to supervising the child or children so exposed to infection.

EXAMINATION OF SPUTUM.

As an aid to diagnosis, arrangements are in existence for the examination, free of cost, of specimens of sputum sent by medical attendants. At the chief dispensary in each of the five large areas a small laboratory is installed for this work; in the three small areas the examination of sputum is carried out at the institution in the area. In addition, an arrangement exists with the Director of the Public Health Laboratory, Manchester, for the examination of specimens, including inoculation tests.

Cultivation tests have been carried out in the laboratories at the Wrightington Hospital and the High Carley Sanatorium, and gasolene concentration tests at the Elswick Sanatorium.

The following statement shows the results of the sputum examinations made at the dispensary laboratories in 1937, compared with the previous year :—

		1936.	1937.
Positive (<i>i.e.</i> , tubercle bacilli present)	.....	1,263	1,369
Negative (<i>i.e.</i> , tubercle bacilli not found)	.....	5,790	6,365
Total	.....	<u>7,053</u>	<u>7,734</u>

In addition to the 7,734 examinations made at the dispensary laboratories, the following work was done during 1937 at the Public Health Laboratory, Manchester :—

Inoculation tests	147
Inoculation tests and cultures	27
Cultivation tests	3
Typing for bovine or human strain	9
Microscopical examinations	5

TUBERCULOSIS AND THE MILK SUPPLY.

The tuberculosis officers co-operate with the local medical officers of health in regard to any case of tuberculosis in a child in which the milk supply is suspected of being the source of infection. The initial procedure is for the tuberculosis officer to inform the medical officer of health, to ask if he is willing to have a bacteriological examination made of the suspected milk, and to take action, if necessary, on the farm. If the milk is designated, *e.g.*, accredited, then the matter is dealt with by the County Medical Officer of Health.

TUBERCULOSIS OFFICERS' VISITS TO SANATORIA AND HOSPITALS.

Periodical visits (mostly monthly) have continued to be paid by the tuberculosis officers to the majority of the pulmonary hospitals, non-County sanatoria, and special hospitals treating County patients. These visits are of mutual help, inasmuch as they keep in touch the medical superintendent and the tuberculosis officer, who are able to confer on the patients' future treatment, the home circumstances, the provisions of the County scheme, and so on.

The following is the rota of visits for 1938 :—

Dr. G. H. Leigh	Heath Charnock Pulmonary Hospital.
Dr. B. MacPhee	Eastby Sanatorium, and Barrowmore Tuberculosis Sanatorium and Settlement.
Dr. G. Fletcher	Aitken and Springfield Sanatoria, and Chadderton Pulmonary Hospital.
Dr. G. Jessel	Wilkinson Sanatorium, Liverpool Open-air Hospital for Children, Leasowe, and Royal Liverpool Children's Hospital, Heswall and Thingwall Branches.
Dr. C. W. Laird	Eccleston Hall and Hefferston Grange Sanatoria.
Dr. G. Leggat	Westmorland Sanatorium.
Dr. E. H. A. Pask	Pemberton Pulmonary Hospital, Derwen Cripples' College, and Robert Jones and Agnes Hunt Orthopaedic Hospital.
Dr. F. C. S. Bradbury	Halifax Sanatorium.

PROVISION OF SPECIAL NOURISHMENT.

Special nourishment is granted to tuberculous patients on the following conditions, which have been approved by the Ministry of Health :—

- (1) That special nourishment be in no case ordered for a period of more than three months, and if in any case a continuance of the treatment is considered from a medical point of view desirable, the Central Tuberculosis Officer to report the case specially to the County Tuberculosis Committee.
- (2) That special nourishment be granted to patients who are waiting for admission to sanatoria or hospitals, or have returned therefrom, when it is thought to be medically essential as part of the cure of the disease.
- (3) That special nourishment may be allowed to cases not included in the foregoing, provided that particulars of the cases are laid before the County Tuberculosis Committee for consideration.
- (4) That each grant of special nourishment will only be allowed by the County Tuberculosis Committee subject to the patient carrying out, in a satisfactory way, the medical treatment and such general hygienic measures as may be advised by the medical practitioner and tuberculosis officer.
- (5) That special nourishment be limited to orders for new milk and cream, unless on special report other nourishment be found desirable.
- (6) That the limit of expenditure be 7/- per week, unless an amount in excess of this sum is specially recommended on medical grounds by the Central Tuberculosis Officer and sanctioned by the County Tuberculosis Committee.

During the year, 2,185 grants of special nourishment for varying periods were made to 963 individual patients as part of their medical treatment. The figures in 1936 were 1,681 grants to 758 patients.

SPECIAL SURGICAL APPLIANCES.

During 1937 the following surgical appliances were supplied to patients on the recommendation of the tuberculosis officers :—

Abdominal belt, 1 ; air ring, 1 ; ankle splint, 1 ; arm splint, 1 ; artificial limbs, 3 ; back supports, 2 ; caliper splints, 24 ; celluloid splints, 26 ; elbow splint, 1 ; hip splints, 4 ; knee splints, 3 ; leather supports, 2 ; leg irons, 3 ; metatarsal bar, 1 ; pelvic belt, 1 ; reclining chair, 1 ; sacro-iliac belts, 2 ; spinal frames, 2 ; spinal supports, 37 ; surgical boots, 24 ; urinals, 7 ; viscoroptosis belt, 1.

PROVISION OF BEDSTEADS, MATTRESSES AND NURSING REQUISITES.

In each County dispensary area a small stock of bedsteads, mattresses (but not bedding), and nursing requisites belonging to the County Council is available for loan to necessitous patients undergoing home treatment.

The bedsteads and mattresses, which are held at the disposal of the consultant tuberculosis officers, have proved of valuable assistance in securing the better sleeping accommodation at home of pulmonary cases considered to be infectious.

The table following shows the number of these articles owned by the County Council, and also the number of patients who have been granted the use of the articles :—

TABLE 20.

Articles.	Quantity owned by County Council, 31/12/37.	Number of patients to whom articles have been loaned during 1937.	Articles in possession of patients on 31/12/37.
Bedsteads	212	31	175
Mattresses	212	38	180
Mattress covers	161	28	135
Air beds	9	7	3
Air cushions	166	142	103
Air pumps	8	—	2
Bath chairs	9	3	—
Bed cradles	8	1	1
Bed pans	98	65	46
Bed rests	58	29	27
Bed slippers	76	23	20
Extension apparatus	14	—	—
Fracture boards	2	—	—
Ground sheets	22	2	12
Hot water bottles	5	1	1
Rest chairs	4	1	1
Rubber sheets	23	6	2
Spinal boxes	16	—	—
Spinal carriages	15	2	2
Sponge beds	3	1	1
Urinals	91	39	46
Water beds	5	1	—

SLEEPING SHELTERS.

There were, at the end of the year, 37 shelters in use by patients at their homes.

The loan of sleeping shelters is made to suitable cases on the recommendation of the tuberculosis officer, after careful consideration of the following points : (1) The condition of the patient and his ability to use the shelter properly ; (2) the position of the shelter ; (3) the home conditions of the patient ; and (4) the means of communication with the nearest inhabited building in case of a sudden relapse.

The number of persons in 1937 who were allowed the use of the shelters was 48.

I have to thank medical officers of health and sanitary inspectors throughout the County for much valuable help in connection with the removal, disinfection, and re-erection of shelters used by County patients.

LANCASHIRE COUNTY COUNCIL.

Table A.—List of Tuberculosis Dispensaries in use in October, 1938, and the Tuberculosis Officers for the Dispensary Areas.

DISPEN- SARY AREA.	COUNTY DISTRICTS.			Estimated POPULATION 1937	Area MEDICAL STAFF and Senior Dispensary Clerks, October, 1938.	NURSING STAFF.	DISPENSARIES.	Days and Hours of DISPENSARY SESSIONS (Distinct from Home Visiting, attending Sanatoria, Hospitals and Care Committees, etc.).
(1)	(2)			(3)	(4)	(5)	(6)	(7)
1	Aslington Flackrood Garnforth Chorley (B.) Chorley (R.) Fulwood Garstang (R.), part of, con- sisting of parishes of— Barnacre-with-Bonds Bilsborrow	Garstang (R.) <i>cont.</i> Bleasdale Cahus Catterall Cloughton Forton Garstang Kirkland Myerscough Nateby Nether Wyresdale Winnarleigh	Horwich Lancaster (B.) Lancaster (R.) Leyland Longridge Lunesdale (R.) Morecambe & Heysham (B.) Preston (R.) Walton-le-Dale Withnell	255,424	Dr. G. H. Leigh, Tuberculosis Dispensary, 8, Middle Street, Lancaster. Assistant Tuberculosis Officer— Dr. F. C. S. Bradbury Dispensary Clerk— Mr. D. Lee	Nurse L. Walker Nurse F. D. Abbott Nurse G. M. Hunter Nurse J. Skelcher	LANCASTER (Chief), 8, Middle Street (Tel. No. 568). (Artificial Light Apparatus). CHORLEY (Branch), 34, St. Thomas's Road (Tel. No. 2763). (X-ray and Artificial Light Apparatus). PRESTON (Branch), 12, Walton's Parade (Tel. No. 2910). (Artificial Light Apparatus).	Monday, 12 noon. Other days and evenings by appointment. Thursday, 12 noon. Other days and evenings by appointment. Wednesday, 11 a.m. Other days and evenings by appointment.
2	Accrington (B.) Bacup (B.) Barrowford Blackburn (R.) Brierfield Burnley (R.) Church	Clayton-le-Moors Clitheroe (B.) Clitheroe (R.) Colne (B.) Darwen (B.) Great Harwood Haslingden (B.)	Nelson (B.) Oswaldtwistle Padiham Rawtenstall (B.) Rishton Trawden Turton	321,996	Dr. B. MacPhee, Tuberculosis Dispensary, High Lea, 108a, Whalley Road, Accrington. Assistant Tuberculosis Officers— Dr. S. C. Adam Dr. D. O. Hughes (2 days per week) Dispensary Clerk— Mr. C. Dowbiggin	Nurse L. F. Norwood Nurse E. Watterson Nurse M. Duggan Nurse H. M. Alcock Nurse E. H. Scott Nurse R. Lambert	ACCRINGTON (Chief), High Lea, 108a, Whalley Road (Tel. No. 2443). (X-ray and Artificial Light Apparatus). DARWEN (Branch), 20, Railway Road (Tel. No. 408). NELSON (Branch), 64, Carr Road (Tel. No. 507). (Artificial Light Apparatus). STACKSTEADS (Branch), Knott Hill House (Tel. No. Bacup 201). (Artificial Light Apparatus).	Tuesday, 2 p.m. ; 5-30 p.m. by appointment. Wednesday, 2 p.m. Thursday, 10 a.m. x-ray exams. Monday, 10 a.m. Tuesday, 2 p.m. Wednesday, 5-30 p.m. by appointment. Friday by appointment. Monday, 2 p.m. ; 5-30 p.m. by appointment.
3	Ashton-under-Lyne (B.) Audenshaw Chadderton Crompton Denton Droylsden Failsworth Heywood (B.)	Lees Limehurst (R.) Littleborough Middleton (B.) Milnrow Mossley (B.) Prestwich Radcliffe (B.)	Ramsbottom Royton Tottington Wardle Whitefield Whitworth	379,773	Dr. G. Fletcher, Tuberculosis Dispensary, Lees Street, Ashton-under-Lyne. Assistant Tuberculosis Officers— Dr. J. L. Armour Dr. W. Fettes Dispensary Clerk— Mr. A. L. Wright	Nurse C. Guilfoy Nurse H. Dewsnap Nurse M. Sherwen Nurse W. Swift Nurse I. F. Macdonald Nurse M. A. Potter Nurse M. A. Potter Nurse A. Flynn Nurse M. Sherwen Nurse W. Swift Nurse W. Swift Nurse H. Dewsnap	ASHTON-UNDER-LYNE (Chief), Lees Street (Tel. No. 1775). (X-ray and Artificial Light Apparatus). CHADDERTON (Branch), Brook Street (Tel. No. Main 1671). MIDDLETON* (Branch), 71, Manchester Old Road (Tel. No. 2706). RADCLIFFE (Branch), 41, Darbyshire Street (Tel. No. 2323). (Artificial Light Apparatus). ROCHDALE (Branch), 168, Drake Street (Tel. No. 3892).	Monday, 10-30 a.m. x-ray exams. Tuesday, 11 a.m. for Mossley cases only ; 2-30 p.m. Friday, 10 a.m. 1st Tuesday of month, 6-30 p.m. Monday, 2 p.m. Wednesday, 10 a.m. 2nd Monday of month, 6-30 p.m. Friday, 2-30 p.m. 2nd Friday of month, 6-30 p.m. Wednesday, 2 p.m. 3rd Wednesday of month, 6-30 p.m. Thursday, 10-30 a.m. 2nd Thursday of month, 6-30 p.m.
4	Atherton Eccles (B.) Farnworth Golborne Irlam Kearsley	Leigh (B.) Little Lever Stretford (B.) Swinton and Pendlebury (B.) Tyldesley	Urmston Westthroughton Worsley	369,354	Dr. G. Jessel, Tuberculosis Dispensary, 13, Church Street, Leigh. Assistant Tuberculosis Officers— Dr. A. B. Jamieson Dr. H. J. Villiers Dispensary Clerk— Mr. T. Naylor	Nurse E. M. Crone Nurse M. B. Jones Nurse M. Gibson Nurse H. M. Shakespeare Nurse F. G. Smith Nurse A. Dickinson Nurse K. Blakemore	LEIGH (Chief), 13, Church Street (Tel. No. 258). ECCLES (Branch), 28 & 30, Gilda Brook Road (Tel. No. 3533). (X-ray and Artificial Light Apparatus). FARNWORTH (Branch), 19-23, Darley Street (Tel. No. 63). PENDLEBURY (Branch), 121, Station Road (Tel. No. Swinton 1895). STRETTFORD (Branch), 14, Derbyshire Lane (Tel. No. Longford 2010).	Wednesday, 10 a.m. Friday, 10 a.m. 2nd Thursday of month, 6-30 p.m. Tuesday, 2 p.m. ; 2-30 p.m. x-ray exams. Thursday, 2-30 p.m. x-ray exams. Friday, 10 a.m. 1st Wednesday of month, 6-30 p.m. Tuesday, 10 a.m. Friday, 2 p.m. 3rd Thursday of month, 6-30 p.m. Monday, 2 p.m. Last Thursday of month, 6-30 p.m. Tuesday, 10 a.m. Thursday, 10 a.m. Last Monday of month, 6-30 p.m.
5	Crosby (B.) Formby Haydock Huyton-with-Roby Litherland	Newton-in-Makerfield Ormskirk Prescot Rainford Skelmersdale	Warrington (R.) West Lancashire (R.) Whiston (R.) Widnes (B.)	296,531	Dr. C. W. Laird, Tuberculosis Dispensary, 7, Claremont Road, Seaforth. Assistant Tuberculosis Officers— Dr. C. Berry Dr. J. N. Whyte Dispensary Clerk— Mr. H. Watson	Nurse M. J. McKeown Nurse I. M. Corfield Nurse L. Farquhar Nurse E. Walch Nurse L. Farquhar Nurse I. M. Corfield Nurse M. J. Wilson	SEAFORTH (Chief), 7, Claremont Road (Tel. No. Waterloo 688). (X-ray Apparatus). HUYTON (Branch), 95, Blue Bell Lane (Tel. No. 383). ST. HELENS (Branch), 90, Hardshaw Street (Tel. No. 3916). (Artificial Light Apparatus). WIDNES (Branch), Chapel Street (Tel. No. 2156). (X-ray Apparatus).	Monday, 2-30 to 4-30 p.m. Wednesday afternoon by appointment. Thursday, 10 a.m., x-ray exams. Friday, 10 to 11-30 a.m. 3rd Thursday of month, 6 p.m. Thursday, 2 p.m. Other days by appointment. 2nd Thursday of month, 6 p.m. Tuesday, 2-30 to 4-30 p.m. Last Tuesday of month, 6 to 7 p.m. Monday, 10 to 11-30 a.m. Friday, 2 to 4 p.m. 1st Wednesday of month, 6 to 7 p.m.
Furness	Dalton-in-Furness Grange-over-Sands	Ulverston	Ulverston (R.)	38,034	Dr. G. Leggat, High Carley Sanatorium, near Ulverston (Tel. No. Ulverston 110). Dispensary Clerk— Mr. F. D. Nichols	Nurse E. A. Duston	ULVERSTON, 69, Albion Place, Lightburn Avenue (Tel. No. 145). (Artificial Light Apparatus). (X-ray Apparatus at High Carley Sanatorium).	Tuesday, 10 a.m. Thursday, 10 a.m.
Fylde	Fleetwood (B.) Fylde (R.) Garstang (R.), part of, con- sisting of parishes of— Great Eccleston Hambleton	Garstang (R.) <i>cont.</i> Inskip-with-Sowerby Out Rawcliffe Pilling Stalmine-with-Stainall Upper Rawcliffe	Kirkham Lytham St. Annes (B.) Poulton-le-Fylde Preesall Thornton Cleveleys	88,808	Dr. G. B. Charnock, Elswick Sanatorium, near Kirkham. Assistant Tuberculosis Officer— Dr. D. O. Hughes (3½ days per week) Dispensary Clerk— Mr. H. E. Langham	Nurse A. Tweedy	FLEETWOOD, 23, Poulton Road (Tel. No. 282). (Artificial Light Apparatus). ELSWICK Sanatorium, near Kirkham (Tel. No. Great Eccleston 22). (X-ray Apparatus).	Tuesday, 9 a.m. Wednesday, 10 a.m. by appointment.
Wigan County	Abram Ashton-in-Makerfield Aspull Billinge and Winstanley	Hindley Ince-in-Makerfield Orrell Standish-with-Langtree	Upholland Wigan (R.)	109,280	Dr. E. H. A. Pask, Wrightington Hospital, Appley Bridge, near Wigan (Tel. No. Appley Bridge 338). Assistant Tuberculosis Officer— Dr. E. H. W. Deane Clerk and Steward— Mr. H. E. Watson	Nurse E. Walters Nurse M. J. Evans	WIGAN, 3, Mesnes Park Terrace (Tel. No. 3172). (Artificial Light Apparatus). (X-ray Apparatus at Wrightington Hospital).	Monday, 9-30 a.m. Thursday, 9-30 a.m. 4th Thursday of month, 6-30 p.m.
Total acreage of Admin. County				1,038,130	1,859,200			

* The Middleton Dispensary will be closed on the 1st February, 1939 ; patients will then attend the Chadderton Dispensary.

TUBERCULOUS EX-SERVICEMEN.

Of the 7,367 patients under supervision of the dispensary staff at the end of 1937, 114 were discharged sailors, soldiers or airmen whose disease was held by the Ministry of Pensions to be attributable to or aggravated by service in the Great War, a pension being granted for the disability. The number of these tuberculous pensioners is declining, falling from 1,017 at the end of 1922 to the figure of 114 mentioned above.

TUBERCULOSIS DISPENSARIES AND STAFF.

Table A, here inserted, shows the dispensary areas with the populations, present staffs, the addresses of the 25 dispensaries in use, and the days and times on which they are open.

EVENING SESSIONS AT DISPENSARIES.

As in previous years, evening sessions have been regularly held at most of the dispensaries for the convenience of patients who are at work during the day.

ARTIFICIAL LIGHT TREATMENT.

A report on the work done at the artificial light centres established at thirteen of the dispensaries is given in Chapter XI.

STATISTICS REQUIRED BY MINISTRY OF HEALTH.

By Memorandum 37/T (Revised), issued in October, 1930, the Ministry require certain information concerning the work done at tuberculosis dispensaries. These statistics, in Table A of the Memorandum, are given in Appendix V of this report.

A comparison with the English counties and England and Wales is contained in Table 16, page 46.

RECOVERED CASES.

Since 1926 the Ministry of Health have allowed cases of pulmonary tuberculosis to be written off the dispensary registers as recovered, provided the disease has been quiescent for two years and arrested for a further three years. During 1937, 203 pulmonary cases were written off the registers as recovered ; of these, 38 were classified as T.B. plus 1, 36 as T.B. plus 2, and 6 as T.B. plus 3.

In regard to non-pulmonary tuberculosis, cases may be written off the registers as recovered if arrest of the disease has been maintained for at least three years. During 1937, 522 non-pulmonary cases were so written off.

On the other hand, in 1937, 57 cases were restored to the registers after having been written off as recovered in previous years ; 18 of these were pulmonary cases when originally on the registers (8 being classified as T.B. plus) and 39 were non-pulmonary.

SUMMARY OF DISPENSARY WORK DONE BY TUBERCULOSIS
OFFICERS IN 1937, SHOWING COMPARISON WITH 1936.

VISITS BY TUBERCULOSIS OFFICERS TO PATIENTS' HOMES—		1936	1937
(a)	Number of new persons (including new contacts) examined for diagnosis or expert opinion	1,041	1,064
(b)	Number of re-examinations of "old" cases and "old" contacts—		
1.	Respecting continued general supervision or dispensary treatment	3,087	3,076
2.	Contacts respecting diagnosis	6	8
3.	Other cases respecting diagnosis	143	198
4.	For special forms of treatment or examinations resulting therefrom—		
	Aspirations	7	5
	Adjustment of splints and surgical appliances	268	227
	Lupus cases	45	33
	Pneumothorax (refills)	3	2
	Tuberculin	1	1
	Mantoux tests	27	12
	Hamburger tests	—	1
		<u>4,628</u>	<u>4,627</u>

DISPENSARY ATTENDANCES BY PATIENTS—

(a)	Number of new persons (including new contacts) examined for diagnosis or expert opinion	4,476	4,765
(b)	Number of re-examinations of "old" cases and "old" contacts—		
1.	Respecting continued general supervision or dispensary treatment	12,294	13,132
2.	Contacts respecting diagnosis	286	393
3.	Other cases respecting diagnosis	2,453	2,398
4.	For special forms of treatment or examinations resulting therefrom—		
	Artificial light (Lancaster, Chorley, Preston, Accrington, Nelson, Stacksteads, Ashton-under-Lyne, Radcliffe, Eccles, St. Helens, Ulverston, Fleetwood and Wigan Dispensaries)	25,640	27,604
	Aspirations	124	101
	Adjustment of splints and surgical appliances	824	943
	Lupus cases	525	582
	Pneumothorax (refills)	2,291	2,212
	Tuberculin	512	328
	Hydnocarpates	322	245
	Mantoux tests	251	292
	Blood sedimentation tests	333	211
	Hamburger tests	—	35
	Other forms	63	70
		<u>50,394</u>	<u>53,311</u>

X-RAY EXAMINATIONS AT COUNTY DISPENSARIES AND INSTITUTIONS—		1936	1937
(a)	Dispensary patients	10,469	11,091
(b)	Institutional patients	9,805	11,033
		<u>20,274</u>	<u>22,124</u>
EXAMINATIONS OF SPUTUM AT COUNTY DISPENSARIES		7,053	7,734
NUMBER OF RECOMMENDATIONS BY TUBERCULOSIS OFFICERS—			
1.	Sanatorium or hospital treatment	1,651	1,585
2.	Dispensary treatment or general supervision	8,717	9,319
3.	Provision of special nourishment	1,681	2,185
4.	Provision of surgical appliances	140	117
5.	Loan of shelters	12	13
6.	Diagnosis not confirmed—		
(a)	Notified cases	107	114
(b)	Non-notified cases	3	4
7.	Cases written off the registers as refusing treatment	20	18
8.	Pulmonary cases written off the registers as recovered	195	203
9.	Non-pulmonary cases written off the registers as recovered	458	522
CARE COMMITTEE MEETINGS ATTENDED BY—			
(a)	Tuberculosis officers	74	68
(b)	Tuberculosis health visitors	133	132
LECTURES OR ADDRESSES GIVEN ON TUBERCULOSIS		16	11
CONSULTATIONS WITH MEDICAL PRACTITIONERS—			
(a)	Personal	606	592
(b)	Other	6,435	6,822
VISITS BY TUBERCULOSIS OFFICERS TO SANATORIA, AND PULMONARY, SPECIAL, AND PUBLIC ASSISTANCE HOSPITALS		365	372
SPECIAL VISITS BY TUBERCULOSIS OFFICERS (<i>i.e.</i> , interviews with medical officers of health, general hospital officials, &c.)		63	78
EXAMINATIONS OF ENTRANTS TO INDUSTRY UNDER SANDSTONE INDUSTRY (SILICOSIS) SCHEME, 1929		95	62
VISITS BY DISPENSARY NURSES TO PATIENTS' HOMES—			
(a)	Routine visits	37,395	37,224
(b)	Application of surgical dressings	1,661	1,668
(c)	Adjustment of splints and surgical appliances	1,761	1,296
(d)	Other actual nursing	1,234	1,305
		<u>42,051</u>	<u>41,493</u>
PATIENTS' DISPENSARY ATTENDANCES FOR ATTENTION BY NURSES—			
(a)	Application of surgical dressings	2,920	2,901
(b)	Adjustment of splints and surgical appliances	259	262
		<u>3,179</u>	<u>3,163</u>
PERCENTAGE OF NEW CASES REFERRED BY MEDICAL PRACTITIONERS, ETC., to tuberculosis officers for an opinion as to diagnosis or treatment <i>before statutory notification</i>		92%	92%

XI.—TREATMENT OF TUBERCULOSIS BY ARTIFICIAL LIGHT.

PRESENT POSITION OF THE COUNTY SCHEME.

Commencing with two experimental light centres in 1925, the County Council have now established 13 artificial light departments in County tuberculosis dispensaries. The following Table 21 shows where these light centres are situated, the date they were opened, and the lamp equipment :—

Dispensary area.	Dispensary at which light centre established.	Date light centre opened.	Lamp equipment.
No. 1	Lancaster	15/7/25	1 "Sunrae" carbon arc. 1 Kromayer mercury vapour. 1 Hanovia mercury vapour.
	Chorley	14/10/26	2 "Sunrae" carbon arcs. 1 Jesionek mercury vapour. 1 Kromayer mercury vapour.
	Preston	29/11/27	2 "Sunrae" carbon arcs. 1 "Alpine Sun" carbon arc. 1 Tungsten arc. 1 Kromayer mercury vapour. 1 Jesionek mercury vapour.
No. 2	Accrington	26/1/32	2 "Sunrae" carbon arcs. 1 Jesionek mercury vapour. 1 Kromayer mercury vapour.
	Nelson	20/11/28	2 "Sunrae" carbon arcs. 1 Jesionek mercury vapour. 1 Kromayer mercury vapour.
	Stacksteads	9/1/28	2 Jesionek mercury vapour. 1 Kromayer mercury vapour. 1 "Sunic" mercury vapour.
No. 3	Ashton-under-Lyne	11/9/25	2 "Sunrae" carbon arcs. 1 Jesionek mercury vapour. 1 Kromayer mercury vapour.
	Radcliffe	20/7/28	1 Sollux luminous heat ray. 2 "Sunrae" carbon arcs. 1 Jesionek mercury vapour. 1 Kromayer mercury vapour. 1 Sollux luminous heat ray.
No. 4	Eccles	1/12/27	2 "Sunrae" carbon arcs. 1 Jesionek mercury vapour. 1 Kromayer mercury vapour. 1 Murray-Levick infra-red.
No. 5	St. Helens	16/1/28	2 "Sunrae" carbon arcs. 1 Kromayer mercury vapour.
Furness	Ulverston	5/6/28	2 "Sunrae" carbon arcs. 1 Kromayer mercury vapour.
Fylde	Fleetwood	25/6/28	2 "Sunrae" carbon arcs. 1 Kromayer mercury vapour.
Wigan County	Wigan	31/5/29	2 "Sunrae" carbon arcs. 1 Jesionek mercury vapour. 1 Kromayer mercury vapour.

The treatment of the patients has been carried out under the direct supervision of the consultant tuberculosis officer of each dispensary area and by the medical and nursing staffs under him.

RESULTS OF TREATMENT.

Tables, showing the results of treatment at each light centre during 1937 have been received from the consultant tuberculosis officers of the dispensary areas and summarised in the following form :—

TABLE 22.

Form of tuberculosis or part of body affected.	Number of cases on treat- ment on 1-1-37.	Number of cases commenc- ing treat- ment in 1937.	Condition of patients whose treat- ment concluded in 1937.				Ceased treat- ment for other reasons. *	Still under treat- ment at end of 1937.
			Quies- cent and appa- rently well. §	Im- proved.	Station- ary.	Worse.		
Skin	87	43	14	3	2	—	11	100
Adenitis with abscess formation and skin involvement	118	158	114	9	1	—	30	122
Adenitis without softening	88	143	96	4	—	1	33	97
Bones, joints and spine	5	11	2	2	1	—	4	7
Abdomen	13	16	6	3	—	—	7	13
Other non-pulmonary conditions	6	10	3	—	—	—	4	9
Lungs—sputum negative	2	—	—	—	—	—	—	2
Pulmonary and non-pulmonary combined	2	—	—	—	1	—	—	1
	321	381						
Total for 1937	702†		235	21	5	1	89	351
	285	377						
For comparison, the total in 1936 was	662‡		221	28	7	1	84	321

* Includes : (1) Patients who did not receive two months' treatment ; (2) patients ceasing light treatment prematurely (*e.g.*, removals, unwilling or unable to continue) ; and (3) patients transferred to sanatoria or hospitals.

† Adults, 312 ; children, 390.

‡ Adults, 310 ; children, 352.

§ The term " quiescent and apparently well " has been chosen to express the condition of a lesion which has been healed by artificial light treatment. By direction of the Ministry of Health no case of non-pulmonary tuberculosis is written off the tuberculosis registers as " recovered " until three years have elapsed without any signs or symptoms of active disease.

The results of treatment of cases of non-pulmonary tuberculosis in 1937 may be considered satisfactory, particularly for two groups of cases, namely : (i) Adenitis with abscess formation and skin involvement, and (ii) adenitis without softening.

The average gain in weight of the 235 patients who became " quiescent and apparently well " was as follows :—Adults 3.25 lbs. ; children 5.06 lbs.

The degree of pigmentation attained in these 235 patients was : Deep 53, medium 54, light 74, none 54.

During 1937, 34 patients, who had ceased treatment in a previous year with the disease quiescent and apparently well, relapsed and returned for further treatment; the classification of these cases was as follows :—Skin 11 ; adenitis with abscess formation and skin involvement 8 ; and adenitis without softening 15.

In addition to the 702 active cases dealt with in Table 22, there were 10 non-pulmonary cases whose condition was quiescent on commencing light treatment. The object of treatment was to prevent a possible recurrence of active disease.

AVERAGE DURATION OF TREATMENT.

The duration of light treatment has varied widely according to the type of non-pulmonary disease. Taking the several groups of patients who during 1937 concluded treatment with the disease quiescent and apparently well the average duration is as given in the following Table 23 :—

Form of tuberculosis or part of body affected.	Number of cases (active on commencing light treatment) which became " quiescent and apparently well."	Average duration of light treatment.	<i>For comparison : Average duration of disease before commencing light treatment.</i>
		Months.	Months.
Skin	14	17·17	117·42
Adenitis with abscess formation and skin involvement.....	114	9·87	19·01
Adenitis without softening	96	8·36	24·36
Bones, joints and spine	2	30·50	234·00
Abdomen	6	7·16	19·83
Other non-pulmonary conditions	3	6·66	2·66

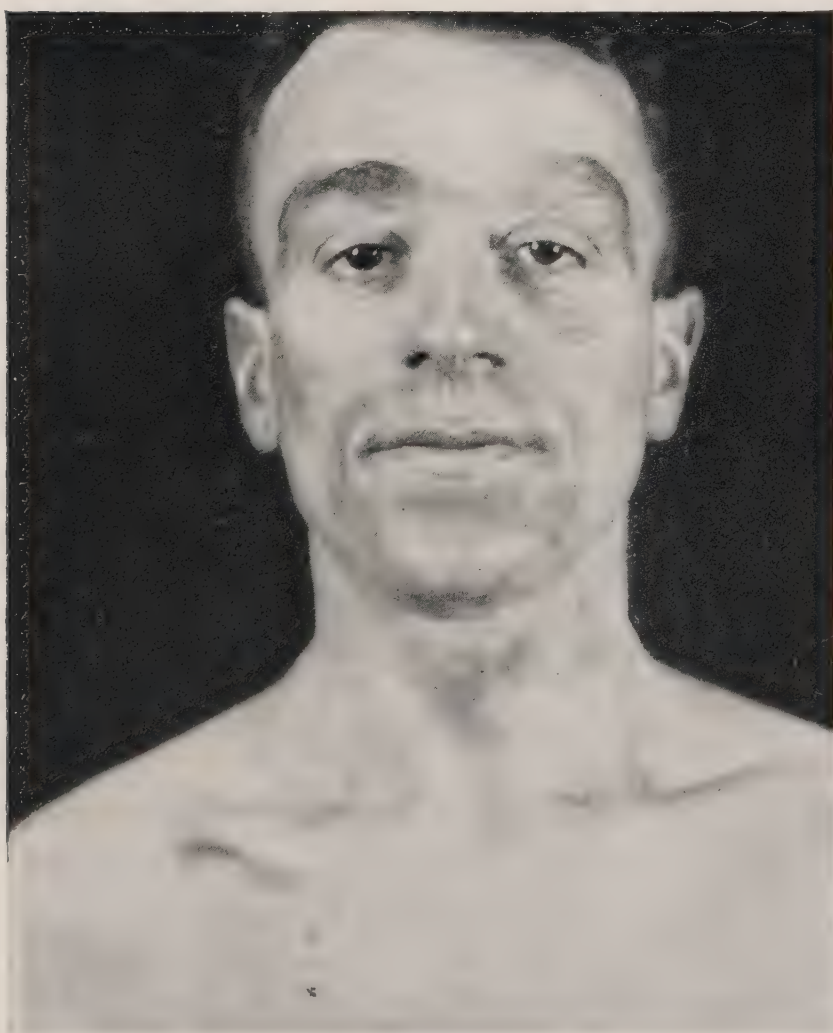
ATTENDANCE OF PATIENTS.

The frequency of attendance of patients depends on several factors, but at seven of the centres the great majority of patients attend twice per week, at five centres thrice per week, and at one centre four times per week. Evening sessions are held for the convenience of those patients who are at work and unable to attend the centres during the day.

ARTIFICIAL LIGHT TREATMENT AT DISPENSARIES.



A.L.1 (a).—G.H., male, aged 35 years. Lupus for 15 years. No previous treatment.



A.L.1 (b).—Same patient. Photograph taken after 12 months' treatment at Eccles Dispensary with carbon arc and Kromayer lamps, and plaster. Patient still under treatment.

(Photographs taken at Eccles Dispensary).



A.L.1 (c).—Same patient. Area of lupus behind left axilla. Duration 15 years.



A.L.1 (d).—Same patient. Photograph taken after 12 months' treatment at Eccles Dispensary with carbon arc and Kromayer lamps, and plaster. Patient still under treatment.

(Photographs taken at Eccles Dispensary).

Of the total patients attending during the year, 84 per cent. were able to continue their normal occupation during the course of treatment ; 35 per cent. were assisted by the payment of railway, bus or tram fares to and from the centres.

During 1937, the attendances of patients at the 13 dispensary light centres numbered 27,604.

PHOTOGRAPHIC RECORDS.

In order to record the progress made by patients, photographs have been taken of a number of cases treated by light—at commencement, during the course of treatment, and on termination.

XII.—THE TREATMENT OF PULMONARY TUBERCULOSIS IN RESIDENTIAL INSTITUTIONS.

The most expensive part of a tuberculosis scheme is the cost of maintaining patients in sanatoria or hospitals. The practice of the tuberculosis medical staff has always been conservative in regard to diagnosis, particularly in children, and every opportunity has been taken to adopt up-to-date methods of diagnosis. For this purpose the County Council have allowed their senior medical staff to attend post-graduate courses and to undertake research.

A very thorough examination at the dispensary, and especially the use there of a good x-ray plant, ensures that only cases with definite tuberculosis are taken on the registers and afforded treatment. This saves a considerable amount of public money by reducing the number of beds required for the treatment of patients.

As regards pulmonary adults, should tuberculosis institutions treat separately or on the same site the observation, the early, the chronic, and the acute case? The problem of dealing with the tuberculous—and more particularly the chronic tuberculous—patient cannot be decided on the basis of a separation of what may be called good and bad cases. The superintendent of an isolated sanatorium is always wishing to have his institution cleared of chronic and advanced cases. While very understandable, this does not help in the prevention and treatment of tuberculosis as a whole. Experience has shown that, by the use of x-rays and minor collapse therapy in tuberculosis institutions—not too big, situated near the patients' homes, superintended or attended by the tuberculosis officer, and taking all types of pulmonary cases—prevention and treatment go hand in hand, and the title given to the institution—hospital or sanatorium—is of little importance.

I believe then that tuberculosis institutions for pulmonary disease should treat on one and the same site the good, the bad, and the intermediate case, and treatment will often have to be of long duration.

Arrangements for the institutional treatment of pulmonary children (up to 15 years of age) require careful consideration, and such patients should be divided into three categories and dealt with in institutions as follows :—

- Class 1. Children with positive sputum (indicating the adult type of pulmonary tuberculosis) : should be provided with separate accommodation at institutions for adult pulmonary cases.
- Class 2. Children with negative or no sputum : should be treated at sanatorium schools.
- Class 3. Children with indefinite symptoms, generally known as the pre-tuberculous type : should attend open-air schools provided by the local education authority.

The conservative attitude adopted in diagnosing adults and children suspected to be suffering from pulmonary tuberculosis is evident from the proportion (35·0 per cent.) of pulmonary cases on the dispensary registers classified as T.B. minus at the end of 1937. In contrast six large counties, with a population in the region of a million, show an average percentage of 46·2 T.B. minus cases ; for the whole of England, the proportion was 48·4.

A further factor seriously affecting the number of beds required is the duration of treatment allowed to a patient. Here again every case has to be carefully weighed on its merits, but generally the following principles have been adopted :—

(a) Patients who are responding to institutional treatment are given a prolonged stay (6 months and over) so long as there is a likelihood of the disease becoming quiescent. To return such cases to their homes and to work before attaining quiescence is uneconomical because of the danger of the patient breaking down and all the good of institutional treatment being wasted.

(b) Patients, particularly the young adult group (aged 15-25) who have been given special forms of treatment (*e.g.*, artificial pneumothorax, phrenicectomy, thoracoplasty, sanocrysin) are allowed a sufficient stay (say, up to 6 months) to show progress from their treatment and are retained up to 12 months or more if their condition warrants it ; cases treated by artificial pneumothorax attend at the dispensaries for a continuation of their treatment.

(c) Patients whose sputum has never been positive and who are not likely to make further progress or to require special treatment are allowed to return home at the end of two or three months' treatment. Many sputum examinations are made in this type of case and the usual practice is to make three tests of consecutive daily specimens.

(d) Patients with positive sputum who are not likely to make further progress and whose home conditions are reasonably satisfactory are allowed to return home at the end of two or three months' treatment.

The tuberculosis officers when making recommendations for institutional treatment bear in mind the following questions : (1) Is institutional treatment required to improve the patient's health ? (2) Is institutional treatment desirable to secure nursing care which cannot be obtained at home ? (3) Is institutional treatment necessary to prevent the spread of infection ?

All the patients in sanatoria and hospitals receive the benefit of and training in hygiene which is advantageous to themselves, and a protection to others, when they return home.

IMMEDIATE RESULTS OF INSTITUTIONAL TREATMENT.

The following Table 24 summarises the *immediate* results of treatment of patients discharged in 1937 from sanatoria and pulmonary hospitals :—

Classification on admission to the institution.	Condition at time of discharge.	Duration of residential treatment in the institution.															Total patients discharged.	
		Under 28 days.			1-3 months.			3-6 months.			6-12 months.			More than 12 months.			No.	%
		M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.		
T.B. minus.	Quiescent	—	—	—	11	9	4	14	20	4	8	7	7	3	6	6	99	39.66
	Improved	3	7	1	9	7	1	32	13	—	12	10	3	4	3	1	106	42.44
	N.M.I.	6	2	3	2	5	1	7	—	—	1	—	1	—	—	—	28	11.22
	Died	7	1	1	1	2	1	2	1	—	—	—	—	1	—	—	17	6.88
T.B. plus 1 (early).	Quiescent	—	1	—	—	1	—	6	1	1	6	14	—	3	6	1	40	28.88
	Improved	1	1	—	7	6	—	11	7	1	9	9	1	7	8	—	68	48.99
	N.M.I.	3	3	—	2	5	—	1	6	—	1	—	—	2	—	—	23	16.55
	Died	1	1	—	2	1	—	—	1	—	1	1	—	—	—	—	8	5.88
T.B. plus 2 (intermediate)	Quiescent	—	—	—	1	2	—	4	4	—	8	6	—	7	7	—	39	5.55
	Improved	3	1	1	27	10	—	57	53	—	59	62	1	40	26	1	341	48.33
	N.M.I.	17	7	1	30	16	—	19	23	1	12	17	—	11	8	—	162	22.99
	Died	22	12	—	27	19	—	13	22	—	18	11	—	8	12	—	164	23.22
T.B. plus 3 (advanced).	Quiescent	—	—	—	—	—	—	2	—	—	—	1	—	1	1	—	5	2.66
	Improved	1	1	—	5	5	—	15	11	—	11	7	—	6	5	—	67	34.77
	N.M.I.	7	3	—	10	6	—	8	7	—	1	3	—	2	2	1	50	25.99
	Died	11	5	—	8	13	—	8	8	—	1	5	—	8	3	1	71	36.88
Total		82	45	7	142	107	7	199	177	7	148	153	13	103	87	11	1,288	—

Diagnosis on discharge from observation.										Stay under 4 weeks.			Stay over 4 weeks.				
Tuberculous										7	6	—	7	3	6	29	32.66
Non-tuberculous										7	5	—	19	12	12	55	61.88
Doubtful										—	—	—	1	1	—	2	2.22
Died										*1	—	—	†1	‡1	—	3	3.44
Grand Total																	1,377

N.M.I. = No material improvement.

" Died " comprises deaths in the institution only.

* Cause of death : Silicosis.

† Cause of death : (a) Uraemia, (b) chronic interstitial nephritis, (c) arteriosclerosis.

‡ Cause of death : (a) Cardiac failure, (b) myocarditis, (c) pulmonary abscess.

Table 24 illustrates that better results are achieved when institutional treatment is given before the sputum becomes positive ; further, the more advanced the disease the less satisfactory are the results.

The following Table 25 shows the names of the sanatoria and pulmonary hospitals and the number of patients suffering from pulmonary tuberculosis admitted and discharged during 1937 :—

Institution.	Definite cases.			Observation cases.		
	Admissions.	Discharges.	Deaths.	Admissions.	Discharges.	Deaths.
Aitken Sanatorium, near Bury	66	56	16	5	4	—
Barrowmore Tuberculosis Sanatorium and Settlement, Great Barrow, Chester	93	68	12	3	2	—
Brompton Hospital, London	4	4	—	—	—	—
Chadderton Pulmonary Hospital, near Oldham	73	47	30	2	2	—
Eastby Sanatorium, near Skipton	5	6	1	6	7	—
Eccleston Hall Sanatorium, St. Helens	10	9	2	—	—	—
Elswick Sanatorium, near Kirkham	85	70	14	14	13	—
Halifax Sanatorium, Shelf	26	24	1	—	—	—
Heath Charnock Pulmonary Hospital, near Chorley	80	53	26	—	—	—
High Carley Sanatorium, near Ulverston	177	163	13	23	22	2
King Edward VII. Sanatorium, Midhurst, Sussex	5	4	—	—	—	—
Lancaster Pulmonary Hospital	90	73	22	8	7	—
Lubas House Children's Sanatorium, Ulverston.....	18	18	—	14	11	—
Peel Hall Pulmonary Hospital, Little Hulton.....	99	86	13	1	1	—
Pemberton Pulmonary Hospital, Wigan	6	2	4	—	—	—
Rufford Pulmonary Hospital, near Ormskirk	90	76	15	3	3	—
Springfield Sanatorium, Rochdale	44	38	10	—	—	—
Westmorland Sanatorium, Meathop, Grange-over-Sands	9	8	1	—	—	—
Wilkinson Sanatorium, near Bolton	19	21	3	—	1	—
Withnell Pulmonary Hospital, near Chorley	93	61	31	7	9	1
Wolstenholme Pulmonary Hospital, Norden, Rochdale	104	68	28	4	4	—
Wrightington Hospital, near Wigan	42	37	11	—	—	—
Other sanatoria and hospitals	35	36	7	—	—	—
Total	1,273	1,028	260	90	86	3

In each of the five large dispensary areas, there is a sanatorium-hospital in the charge of the consultant tuberculosis officer, an arrangement of the highest importance because patients come to these hospitals from the area administered by the tuberculosis officer, who is, therefore, conversant with the home conditions. Further, it is of great advantage to the tuberculosis officer, because he can himself apply certain forms of treatment and carry out valuable clinical and research work.

A number of patients are also accommodated in pulmonary hospitals belonging to other bodies situated in or near the area. Arrangements have been made (with minor exceptions) for the tuberculosis officers to visit periodically these institutions and confer with the medical superintendents on the following matters :—

1. The question of extension of patients' treatment or their return home, having special regard to the home conditions which are known to the tuberculosis officers.
2. The special consideration of any patient who is not responding to treatment at the institution.
3. The question of the patients' future treatment, including the facilities for treatment at home.
4. Applications from patients for transfer to other institutions, or for their discharge home, and to settle, where possible, any difficulties or complaints by patients.
5. The question of ancillary treatment, *e.g.*, dental.

The foregoing working arrangements have enabled the highly infectious cases with unsatisfactory home conditions to remain at the pulmonary hospitals for long periods for the purpose of isolation.

AFTER-HISTORIES OF ADULT PATIENTS SUFFERING FROM PULMONARY TUBERCULOSIS.

In my report for 1933, the after-histories of adult pulmonary patients who came on the dispensary registers during the years 1920, 1925 and 1930 were recorded. As there will be very little change in the results, the after-histories have not been worked out again this year.

XIII.—THE TREATMENT OF NON-PULMONARY TUBERCULOSIS.

IMMEDIATE RESULTS OF INSTITUTIONAL TREATMENT AT GENERAL AND SPECIAL HOSPITALS.

A summary of the condition on discharge of patients treated during 1937 in approved general and special hospitals is given in the following Table 26 :—

Classification on admission to the institution.	Condition at time of discharge.	Duration of residential treatment in the institution.															Total patients discharged.	
		Under 28 days.			1-3 months.			3-6 months.			6-12 months.			More than 12 months.				
		M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	No.	%
Bones and joints.	Quiescent	—	1	—	6	3	4	7	6	3	5	3	11	4	6	31	90	46·6
	Improved	4	6	1	5	8	4	1	2	4	3	3	7	6	3	7	64	33·2
	N.M.I.	2	5	2	3	2	2	—	1	3	1	2	1	4	1	1	30	15·5
	Died	1	—	1	—	—	1	1	—	1	1	1	—	—	1	1	9	4·7
Abdominal.	Quiescent	—	—	1	4	4	5	2	5	4	2	—	1	1	—	—	29	42·6
	Improved	—	3	6	2	3	2	3	2	1	1	—	—	1	1	—	25	36·8
	N.M.I.	—	1	2	—	1	2	—	—	—	—	—	—	—	—	—	6	8·8
	Died	2	1	2	—	—	—	—	1	—	—	—	—	1	1	—	8	11·8
Other organs.	Quiescent	1	—	—	—	2	1	1	1	—	—	—	1	1	—	1	9	12·8
	Improved	6	12	—	10	3	2	7	3	—	1	—	1	—	—	—	45	64·3
	N.M.I.	5	1	—	1	2	—	—	—	—	—	—	—	—	—	—	9	12·8
	Died	3	1	2	—	—	—	—	—	—	1	—	—	—	—	—	7	10·0
Peripheral glands.	Quiescent	2	5	1	2	1	7	3	2	5	—	—	5	—	1	—	34	26·6
	Improved	4	16	31	5	6	10	1	1	6	1	—	3	1	—	—	85	66·4
	N.M.I.	—	1	2	—	2	2	—	—	2	—	—	—	—	—	—	9	7·0
	Died	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total		30	53	51	38	37	42	26	24	29	16	9	30	19	14	41	459	—

Diagnosis on discharge from observation.										Stay under 4 weeks.			Stay over 4 weeks.				
Tuberculous										5	—	8	6	4	5	28	65·1
Non-tuberculous										—	—	1	5	—	3	9	20·9
Doubtful										1	—	1	1	—	—	3	7·0
Died										—	*1	†1	—	—	†1	3	7·0

Grand Total																	502
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N.M.I.=No material improvement.

“ Died ” comprises deaths in the institution only.

* Cause of death : Addison's disease.

† Cause of death : Acute broncho-pneumonia.

‡ Cause of death : Spinal meningitis with paraplegia.

The following Table 27 shows the names of the general and special hospitals, and the number of patients suffering from non-pulmonary tuberculosis admitted and discharged during 1937 :—

Institution.	Definite cases.			Observation cases.		
	Ad-missions.	Dis-charges.	Deaths.	Ad-missions.	Dis-charges.	Deaths.
Ancoats Hospital, Manchester	3	3	—	—	—	—
Ashton-under-Lyne District Infirmary	11	12	—	2	2	—
Blackburn and East Lancashire Royal Infirmary	15	15	—	1	1	—
Bolton Infirmary	7	7	—	1	1	—
Bury Infirmary	10	8	2	—	—	—
David Lewis Northern Hospital, Liverpool	4	3	—	—	—	—
Eastby Sanatorium, near Skipton	4	9	—	—	—	—
Liverpool Open-air Hospital, Leasowe, Cheshire.....	15	14	—	1	2	—
Liverpool Royal Infirmary	11	11	1	1	—	—
Liverpool Stanley Hospital	2	2	—	—	—	—
Manchester Royal Infirmary	36	36	—	1	—	—
Manchester and Salford Hospital for Skin Diseases, Manchester	11	12	—	—	—	—
Ormskirk General Hospital	3	3	—	—	—	—
Preston Royal Infirmary	10	8	1	—	—	—
Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry	7	6	—	—	—	—
Royal Albert Edward Infirmary, Wigan	17	16	1	—	—	—
Royal Lancaster Infirmary	7	5	1	—	—	—
Royal Liverpool Children's Hospital—						
Heswall, Cheshire	8	10	—	1	1	—
Myrtle Street, Liverpool	6	6	—	1	1	—
Royal Southern Hospital, Liverpool	2	3	—	—	—	—
Salford Royal Hospital	5	4	1	—	—	—
Warrington Infirmary	12	12	—	—	—	—
Wrightington Hospital, near Wigan	234	211	17	40	32	2
Other general and special hospitals	14	19	—	1	—	1
Total	454	435	24	50	40	3

AFTER-HISTORIES OF PATIENTS SUFFERING FROM NON-PULMONARY TUBERCULOSIS.

In my report for 1933, the after-histories of adults and children first treated during the years 1920, 1925 and 1930 were recorded. It was found that roughly three-quarters of the adults and children had recovered from their non-pulmonary condition or arrived at a stage with the disease arrested or quiescent. As there will be very little change in the results, the after-histories have not been investigated again in detail this year.

XIV.—DISPENSARY AREA No. 1
(including Lancaster Pulmonary Hospital).

Area (estimated population 255,424) embraces Lancaster, Morecambe and Heysham, Garstang Rural (part), Preston Rural, Walton-le-Dale, Chorley and Horwich districts.

Consultant Tuberculosis Officer **DR. G. H. LEIGH.**
(Dr. Leigh is also visiting physician to the Lancaster Pulmonary Hospital).

Assistant Tuberculosis Officer **DR. F. C. S. BRADBURY.**
(Dr. Bradbury is deputy visiting physician to the Lancaster Pulmonary Hospital).

Dr. Leigh reports as follows :—

The number of new cases and contacts examined for diagnosis during 1937 was 566. Of these, 162 were examined at Lancaster, mainly at the dispensary, but a few were examined at the Lancaster Pulmonary Hospital when they attended for x-ray examination.

A short analysis has been made of 145 of the new cases referred for chest examination during the year, 114 of which were found to be non-tuberculous, and 31 were taken on the registers as tuberculous cases. Of the latter, 21 were found to have positive sputum. Of the remaining 10 negative cases, 4 had definite x-ray signs, 2 were cases of prolonged pleurisy with definite radiographic signs, one had haemoptysis as well as slight x-ray signs, another had severe laryngeal involvement, and 2 were children who had slight x-ray signs.

As is usual in dispensary work, enquiry is made as to what symptoms caused the patients to seek advice with regard to their health. Most of the cases had more than one symptom, and an attempt has been made to record the principal symptom in each case. In three cases loss of weight was the only sign, but it occurred as a collateral sign in 49 cases.

In order to make the figures comparable, as there were 114 non-tuberculous cases and only 31 tuberculous ones, it has been necessary to adjust the numbers in the tuberculous group in Table 28 overleaf. For instance, 6 cases out of 31 complained of lassitude whilst 13 out of 114 non-tuberculous patients made the same complaint, so that, had there been 114 tuberculous patients, the same proportion of whom had complained of lassitude, the number would not have been 6, but 22. The proportionate figures have been put in the last column referring to the tuberculous cases, whilst the figures of the non-tuberculous cases have not been altered.

In comparison with the non-tuberculous group it would seem that in the tuberculous series lassitude occurs more often, haemoptysis about the same, laryngitis more frequently, and most of the other symptoms about the same, except that shortness of breath, post-pneumonic conditions and the sequelae of whooping cough and scarlet fever are not represented in this history of the tuberculous group. The most frequent symptoms in order of frequency were cough, haemoptysis and lassitude. Table 28 gives the number of cases, complaining of each symptom or sign, divided into age-groups.

A family history, or history of exposure to infection, or both, was present in 7 of the tuberculous cases and in 35 of the non-tuberculous cases. Allowing for the difference in numbers, these figures would be 26 and 35, thus indicating that family history was relatively less frequent in the actual tuberculous group. Twenty-one cases had family history and also a history of infection, 18 had family history only, and 3 had history of infection without definite family history.

TABLE 28. *Comparison of principal symptom in two groups of new cases examined by tuberculosis officer, (a) non-tuberculous and (b) tuberculous.*

Principal symptom.	Non-tuberculous.					Tuberculous.					Comparative figure
	Under 15	15-25	26-60	Over 60	Total.	Under 15	15-25	26-60	Over 60	Total.	
Lassitude	7	—	6	—	13	—	3	3	—	6	22
Haemoptysis	2	2	10	2	16	—	1	4	—	5	18
Laryngitis	4	—	1	—	5	—	1	3	—	4	15
Bronchitis	2	2	5	—	9	2	—	—	—	2	7
Dyspnoea	1	—	6	—	7	—	—	—	—	—	—
Cough	5	8	10	1	24	—	—	6	1	7	26
"Chill" including influenza and colds.....	—	5	5	—	10	—	2	1	—	3	11
Pain, etc.	1	1	6	—	8	—	2	1	—	3	11
Post-pneumonia	2	1	4	—	7	—	—	—	—	—	—
Post-whooping cough and scarlet fever.....	3	—	—	—	3	—	—	—	—	—	—
Loss of weight only	—	1	2	—	3	—	—	—	—	—	—
Other symptoms	—	5	4	—	9	—	1	—	—	1	4
Total	27	25	59	3	114	2	10	18	1	31	114

Although it is obvious that these figures are too small on which to form an accurate generalization, the comparison is interesting.

There have been fewer cases treated by "artificial sunlight"; a slight increase in the number at Lancaster counterbalanced a decrease in the

number at Preston, whilst the number of individual cases at Chorley has been reduced from 63 to 45. The majority of the patients suffered from cervical adenitis and most of them have responded very well to treatment. Tuberculous skin cases under treatment at the three centres numbered 18. The installation at each dispensary includes one or more carbon arc lamps, one mercury vapour lamp and one Kromayer mercury vapour lamp for local treatment.

The number of artificial pneumothorax cases having refills at the dispensary remains about the same as in the previous year, but the number of actual attendances has increased.

The Hamburger tuberculin ointment test has replaced the Mantoux test and has been found to be satisfactory.

In addition to ordinary skiagrams, tomograms of patients from the dispensary area are taken at Lancaster Hospital.

The hospital service of the area has been further extended by the inclusion of Chorley and District Hospital in the list of institutions to which we can send patients.

Co-operation with various other public bodies has continued, and I would specially mention the help we have had from the housing department of the Lancaster City Council.

The three care committees in the district have continued their sympathetic work, details of which will be found in the section of the report dealing with care work (Chapter XXV.).

To my medical colleague and the dispensary staff I would express thanks for their help during the year.

LANCASTER PULMONARY HOSPITAL.

Matron MISS L. CLARK (to 31/7/38).

MISS A. PATCHETT (from 1/8/38).

The Lancaster Isolation Hospital, built to replace the Luneside Hospital which was closed in October, 1927, is situated on the northern boundary of the City of Lancaster. Building operations were commenced by the Lancaster and District Joint Hospital Board in July, 1932, and the first tuberculous patient was admitted on the 11th February, 1935.

By agreement between the Lancashire County Council and the Joint Hospital Board, a separate block was provided for patients suffering from pulmonary tuberculosis. It contains a waiting room, duty room, dining-room, scullery-serverly, stores, x-ray room, treatment room, staff lavatory, dark room, and dispensary in the centre ; three single and six double cubicles accommodating 15 male patients, with recreation room and sanitary annexe on the east side ; and three single and six double cubicles accommodating 15 female patients, with recreation room and sanitary annexe on the west side. There are also two double sleeping shelters for male patients and one double shelter for females, making a total accommodation for 36 patients (19 males and 17 females). The Joint Hospital Board are responsible for the maintenance and nursing of the tuberculous patients, the County Council paying to them the cost thereof.

The weekly maintenance charge for 1937-38 was £2 18s. 0d. per patient.

The consultant tuberculosis officer for Dispensary Area No. 1 is the visiting physician, and the assistant tuberculosis officer the deputy.

The x-ray apparatus in the tuberculosis block is, for convenience, also used for the dispensary patients from Lancaster and district.

The average length of stay of patients at the Lancaster Pulmonary Hospital during 1937 was as under :—

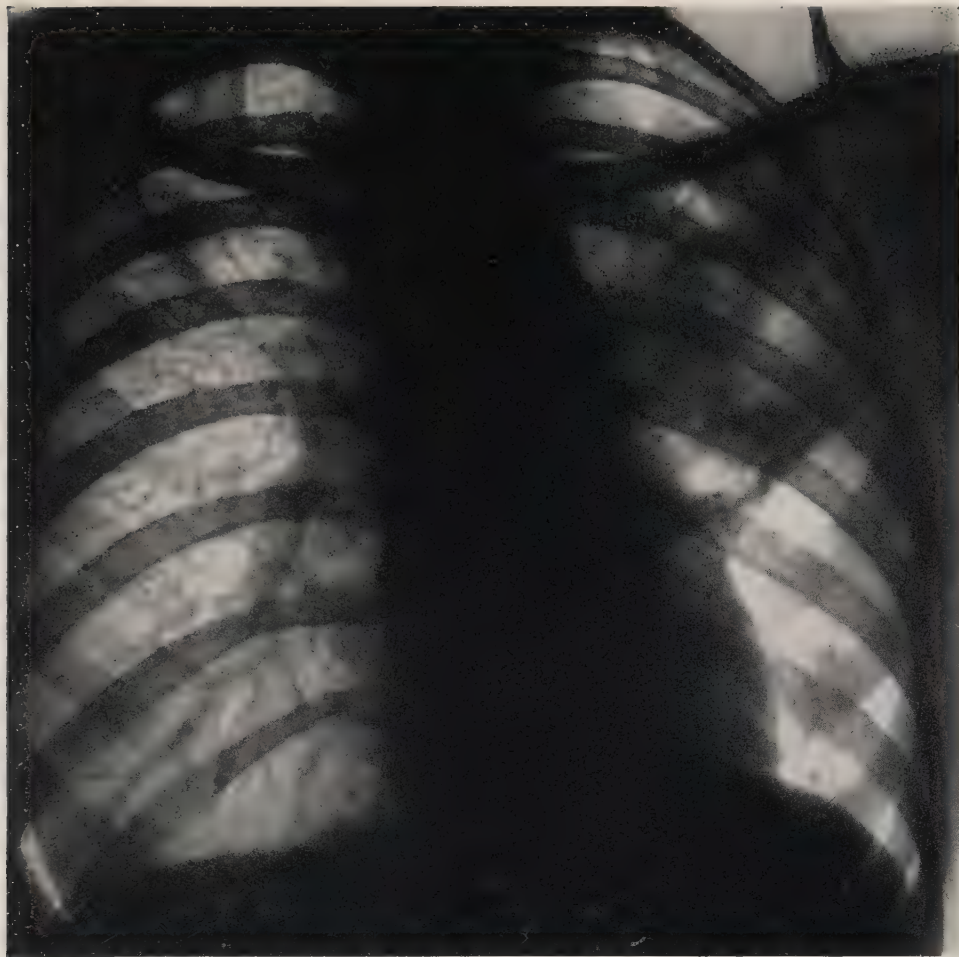
Patients discharged	.....	.....	.....	.....	129 days.
Patients who died in the hospital	.....	.....	.....	.....	78 days.
Observation cases discharged	.....	.....	.....	.....	16 days.

Dr. Leigh reports :—

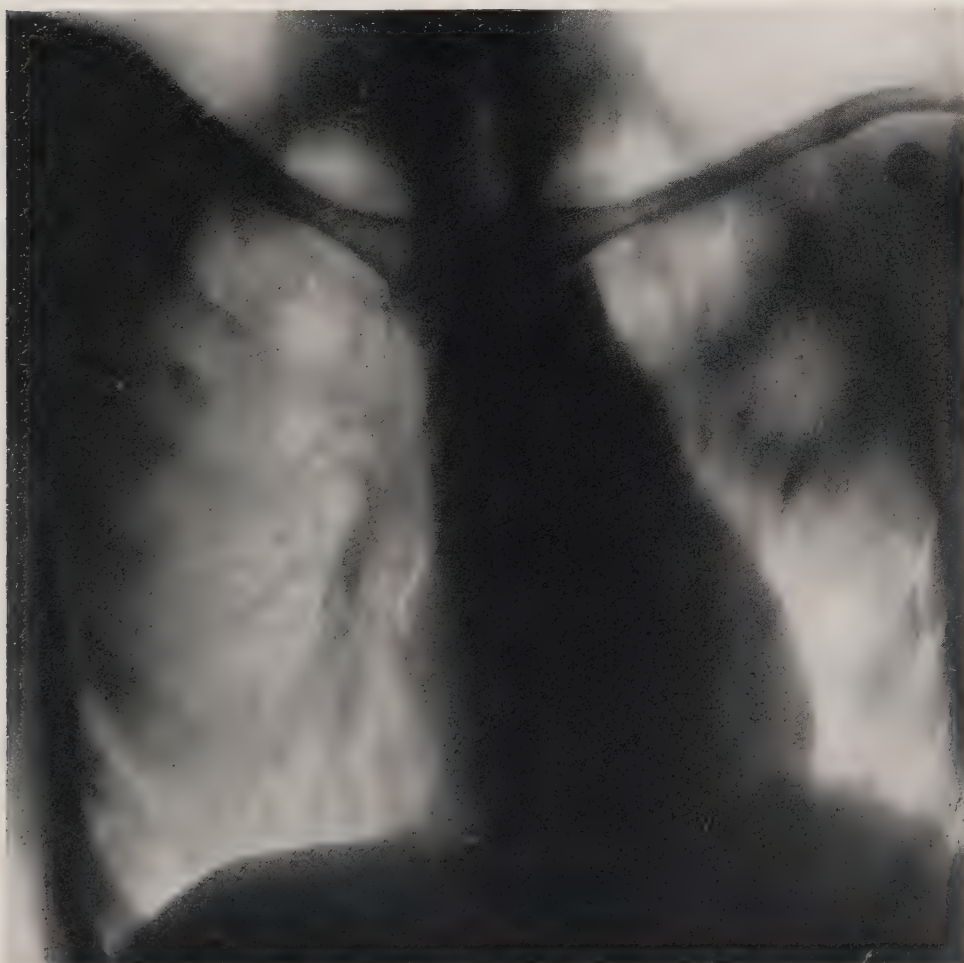
During 1937, 92 patients were admitted, 75 were discharged, and 22 died ; in addition, 8 cases were admitted for observation and diagnosis and 7 were discharged.

One feature of the hospital work during the year has been the increase in the number of artificial pneumothorax cases. The number of inductions is four times as great as that for 1936, and many more refills have been given ; this has been made possible by the admission of more patients in a less advanced stage. Of the 29 inductions (including one case of double artificial pneumothorax) 21 were successful, and 8 were unsuccessful, that is, either no air could be put into the pleural cavity or the quantity introduced was not sufficient to be of use to the patient.

TOMOGRAPHY.



L.1 (a).—F.T., female, aged 30 years. T.B. plus 2. Routine skiagram. A large area of infiltration is present in the left upper and middle zones, within which translucent areas can be seen suggesting the presence of cavities. Two small areas of ill-defined opacity are visible in the right upper zone.

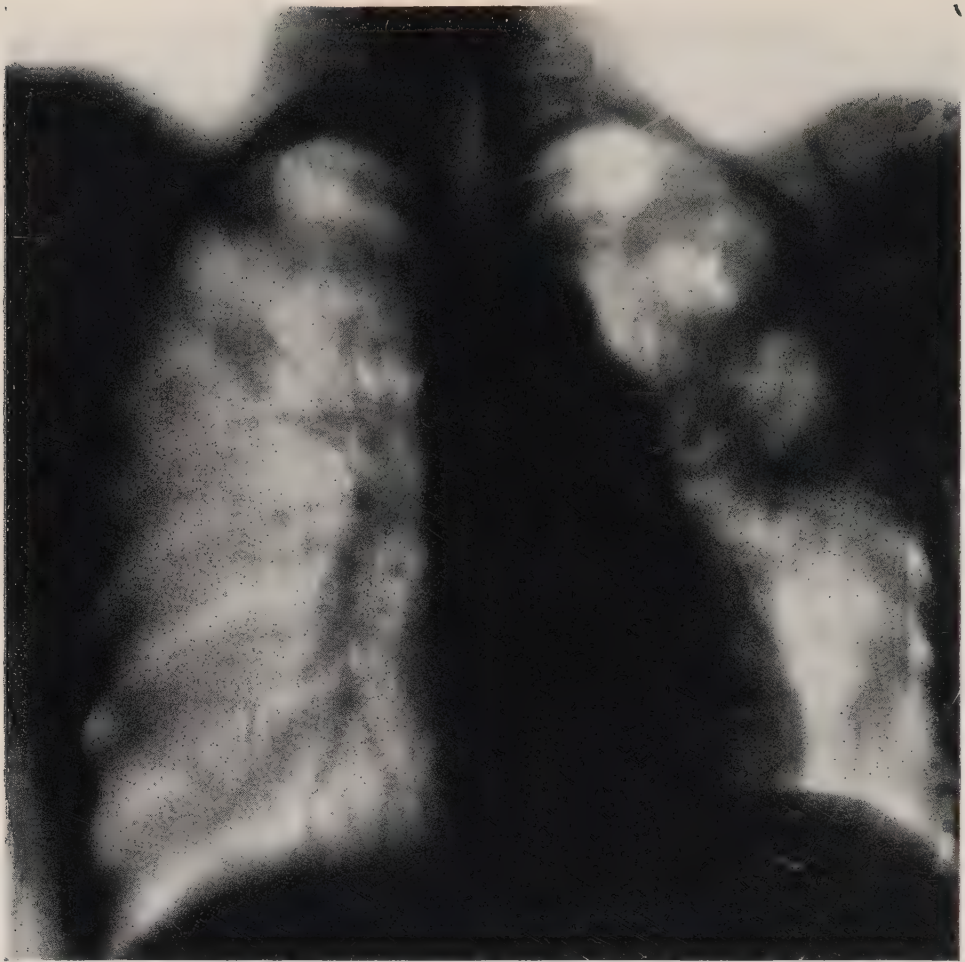


L.1 (b).—Same patient. Tomogram taken two inches from anterior surface of chest. There is a large area of infiltration in the left middle zone and a smaller area in the corresponding position on the right side.

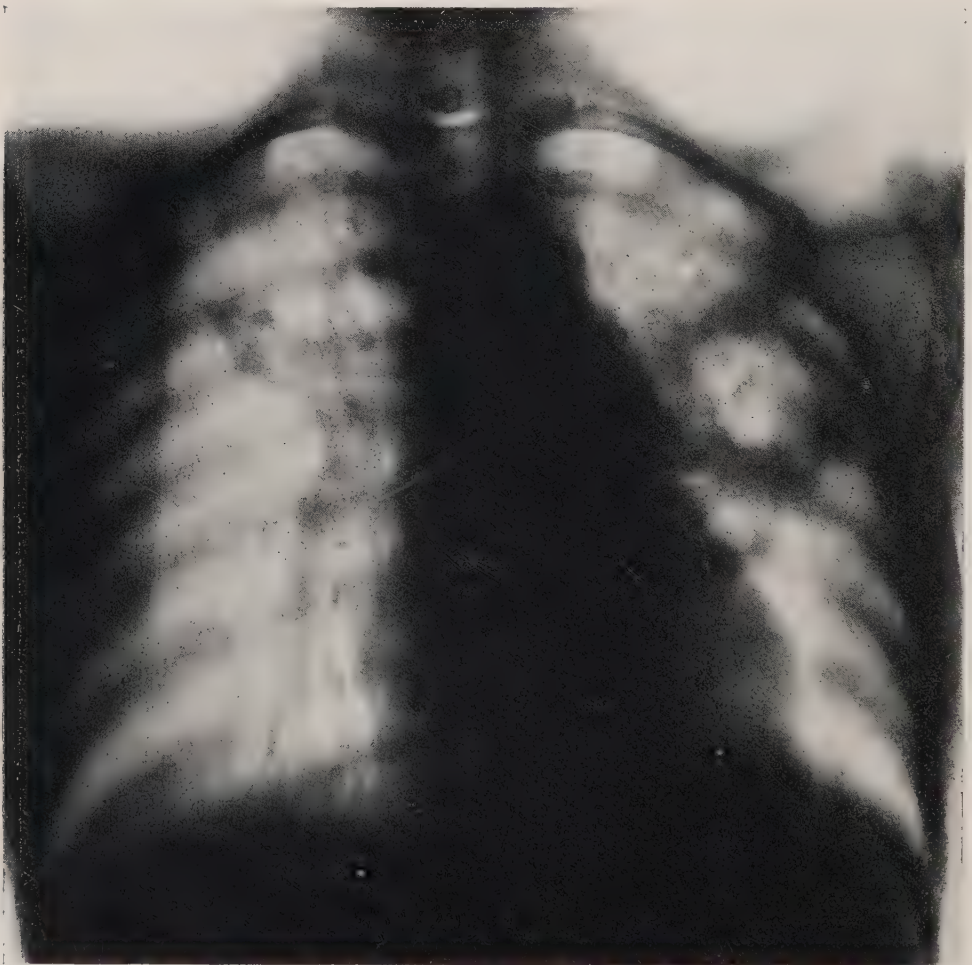
(Skiagrams taken at Lancaster Pulmonary Hospital).

RIGHT.

LEFT.



L.1 (c).—Same patient. Tomogram taken $3\frac{1}{4}$ inches from anterior surface of chest. Cavitation left middle zone becoming more definite. Vague area of infiltration right upper zone.



L.1 (d).—Same patient. Tomogram taken two inches from posterior surface of chest. Several cavities are visible in the left upper and middle zones. An irregular deposit is present in the 4th interspace on the right side.

(Skiagrams taken at Lancaster Pulmonary Hospital).

RIGHT.

LEFT.

Treatment by gold salts has been continued, and the number of injections has been double that of the previous year.

One of the patients suffered from diabetes in addition to tuberculosis and required injections of insulin.

Air-tight drains with gravity suction were applied in two cases of pyo-pneumothorax, one of which had followed the rupture of an adhesion during artificial pneumothorax treatment, and the other had arisen from a spontaneous pneumothorax that had occurred before admission.

No new curative remedy has been tried this year, but hemoplastin injections have been given for the arrest of haemorrhage generally with success. Ionisation by using a galvanic current and a solution of potassium iodide has been tried to give relief in cases of laryngeal tuberculosis ; some of the patients appeared to benefit, but the total number of cases is too small on which to base general conclusions as to the value of the treatment.

The x-ray work has increased, slightly more films having been taken and more screen examinations made than in 1936. The efficiency of the radiographic work has been improved by the construction of an attachment to the couch and tube stand, which enables tomograms to be taken. After many experiments, Dr. Bradbury succeeded in producing tomograms which showed signs not visible on an ordinary radiographic film. The tomograms have been especially useful in the diagnosis of obscure chest conditions and in the control of artificial pneumothorax cases. The illustrations here inserted are, first, of an ordinary radiogram and then of tomograms showing a cavity invisible on the first film.

Sputum examinations have been done by the film method and stained by Ziehl-Neelsen stain, with the exception of a few specimens in which Dr. Carl Spengler's modification was used.

There are not sufficient able-bodied patients to maintain an organised system of occupational therapy, but all who are able to take part in the ward work do so for about half-an-hour a day.

The principal recreation for the men is billiards, and there is a good bowling green of which free use is made in the summer. In this connection it may be mentioned that a bowling party from the Nashy Old Boys' Society visited the hospital and organised a tournament in which the patients took part. The women have a piano in their recreation room, and during the warmer weather they enjoy themselves on a large putting green. An additional form of recreation available for

both men and women is a miniature cinematograph. The matron kindly selected and procured films from a film library, and the performances gave considerable pleasure to the patients. This entertainment has one great advantage over all others, inasmuch as even the bed cases can take part with the other patients ; it is seldom that more than three patients are unable to see the films. As in previous years, whist drives have been arranged each month. The Christmas festivities were, as usual, quite successful.

Each week a religious service is held ; on one day in the month it is a Nonconformist service and on the other days it is conducted by Church of England clergymen. Holy Communion is administered regularly by the Church of England and Roman Catholic clergy. We have to thank the Vicar, the Rev. H. Moss, and his colleagues, the Rev. F. F. Pepper and his colleagues of the Free Church Council, and the Roman Catholic clergy for their ministerial help and kindness to the patients.

The probationer nurses receive a course of training organised by the College of Nursing in which the nursing of tuberculosis forms a part. A series of lectures on this subject has been given.

I would express thanks to the nursing staff for their efficient service during the year, to my deputy, Dr. Bradbury, for valuable assistance in the treatment of patients, and to Dr. Chapman, the medical officer of the Board, for his willing help in cases of emergency.

Details of work carried out at Lancaster Hospital during 1937 :—

Artificial pneumothorax—	
Inductions	29
Refills	308
Gas replacements.....	9
Oil replacements	3
Gold salts—	
Solganal injections	183
Hepatex injections	16
Insulin injections	308
Blood sedimentation tests (Cutler's method)	206
X-ray work—	
Screen examinations	316
Skiagrams	284
Sputum examinations (positive 206, negative 84)	290

Numbers of patients afforded special treatment in the hospital for the first time during 1937 :—

Artificial pneumothorax—	
Attempted	28
Satisfactory	20
Unsatisfactory	8
Gold salts (solganal)	14
Hepatex	2
Insulin	1
Air-tight drainage	2

Numbers of patients in the hospital on the 31st December, 1937, who were having special treatment :—

Artificial pneumothorax	8
Gold salts	5
Air-tight drainage	1

SUMMARY OF DISPENSARY WORK.

Number of tuberculous cases under supervision on 31st December, 1937 (Definitely tuberculous, 891 ; doubtful, 10)	901
	Examinations of <i>new persons</i> and <i>new contacts</i> for diagnosis.
	Re-visits or re-attendances of " <i>old</i> " cases and " <i>old</i> " contacts.
Examinations by tuberculosis officer at—	
Patients' homes	148
Lancaster Chief Dispensary	162
Chorley Branch Dispensary	161
Preston Branch Dispensary	95
	418
Attendances of patients at dispensaries for artificial light treatment—	
Lancaster Dispensary (32 individual patients)	576
Chorley Dispensary (45 individual patients)	1,621
Preston Dispensary (41 individual patients)	1,420
Attendances for artificial pneumothorax treatment (20 individual patients)	250
Mantoux tests	1
Blood sedimentation tests (Cutler's method)	21
Hamburger tests	36
Care committee meetings attended by—	
(a) Tuberculosis officers	8
(b) Tuberculosis health visitors	36
Lectures or addresses given	3
Visits by tuberculosis officers to sanatoria, and pulmonary and special hospitals	17
Special visits by tuberculosis officers (<i>i.e.</i> , interviews with medical officers of health, general hospital officials, &c.)	10
Visits by dispensary nurses to patients' homes—	
Routine visits.....	3,614
Application of surgical dressings	260
Adjustment of splints and surgical appliances	2
Patients' dispensary attendances for attention by nurses—	
Application of surgical dressings	312
Sanitary defects reported to the local medical officers of health	3
Sanitary defects which after notification were remedied	2
Disinfections carried out by local sanitary authorities	186
Percentage of new cases referred by medical practitioners, &c., to tuberculosis officer for an opinion as to diagnosis or treatment <i>before</i> statutory notification	96.0%

XV.—DISPENSARY AREA No. 2.
(including Withnell Pulmonary Hospital).

Area (estimated population 321,996) embraces Clitheroe, Colne, Nelson, Burnley Rural, Blackburn Rural, Accrington, Darwen, Haslingden, Rawtenstall and Bacup districts.

Consultant Tuberculosis Officer DR. B. MACPHEE.
(Dr. MacPhee is also visiting medical superintendent of the Withnell Pulmonary Hospital).

Assistant Tuberculosis Officers DR. S. C. ADAM.
DR. J. N. WHYTE (to 30/11/37).
DR. D. O. HUGHES (from 1/12/37).
(2 days per week)

Dr. MacPhee reports :—

During the year 1937, special visits to Accrington Chief Dispensary were made by the following gentlemen: County Councillor R. B. Yates, Darwen; Dr. R. J. Matthews, Welsh Board of Health; and Dr. J. E. Chapman, Ministry of Health.

Generally speaking, the work at the various dispensaries has been conducted on similar lines to those in former years. At the Accrington Chief Dispensary were concentrated the x-ray work, artificial pneumothorax refills, and sputum examinations for the whole area. This arrangement entails some disadvantage to patients in travel, but is counterbalanced by advantages in economy and efficiency.

During 1937, 1,380 skiagrams were taken (including 26 for County patients in Eastby Sanatorium), 430 screenings made, and 1,099 specimens of sputum examined (positive 163, negative 936). Artificial pneumothorax refills were also given to 22 patients.

In regard to cases where diagnosis presented especial difficulties, sputum and other pathological specimens were sent, as in former years, to the Public Health Laboratory, Manchester, for guinea-pig inoculation and culture. In all, 42 specimens were submitted; 9 were reported as positive to the tubercle bacillus, and 33 negative.

In this area during the year, 166 patients were removed from the dispensary registers as recovered. Of these, 45 were cases of pulmonary tuberculosis, 19 of which had had positive sputum, 116 were cases of

non-pulmonary tuberculosis, and 5 were combined pulmonary and non-pulmonary cases.

Little change was made in the treatment by ultra-violet radiation of lupus and other non-pulmonary forms of tuberculosis. In selected cases of lupus, ancillary forms of treatment were adopted, such as "spiking," "Snow," and the intradermal injection of hydnocarpus oil.

During the year, 12 patients received tuberculin injections. These cases comprised tuberculosis of glands and of the genito-urinary system.

Every effort has been made to examine and x-ray as many contacts as possible, particularly amongst the young adults and school children. In the examination of contacts a number of obstacles have, however, to be overcome, such as the natural reluctance of some persons to a medical examination; with others a fear of the result; and again the distance of travel. In order to obviate workers losing time, special arrangements were made to x-ray in the evenings and on Saturday afternoons.

In July, 1937, a "Medio D" x-ray apparatus was installed at the Accrington Chief Dispensary and with this up-to-date plant skiagrams of exceptional quality and detail are consistently produced, a valuable asset in diagnosis. Below are given a few brief details of its characteristics :—

The power unit contains a four-valve H.T. rectified generator, with a high maximum output.

The tube is a 2/6 kw. "Metalix" (shock-proof) double-focus interior tube, air-cooled by an enclosed electric fan, giving excellent detail in both chest and bone radiography.

The control table is of the automatic tube loading type, incorporating the valve-type timeswitch system, and automatic interlocking controls.

A combined tilting couch with travelling Potter-Bucky diaphragm, screening stand, and separate vertical cassette stand for chest radiography.

During the year under review, 81 cases received assistance through the County care fund at a cost of £299.

I have again pleasure in placing on record the willing assistance given at all times by the officers of the various local authorities and by the Lancashire County school medical officers, as well as the increasing enthusiasm and co-operation of the general practitioners.

Again I would express my grateful appreciation to my medical colleagues, and the nursing and clerical staffs for their willing and helpful co-operation during the year.

WITHNELL PULMONARY HOSPITAL, NEAR CHORLEY.

Matron MISS D. WILLMAN.

The County Council in December, 1924, purchased Withnell Hall (including two cottages, outbuildings, and 37 acres of land) situated on the main road from Blackburn to Chorley. The first patient was admitted on the 15th August, 1927. Accommodation is provided for 52 male patients (20 in double cubicles, 6 in single cubicles, 18 in four wards and 8 in wooden cubicles); five of the beds are rented by the Burnley Corporation. There is a small treatment block in which artificial pneumothorax inductions and refills and minor operations are carried out. The hospital serves mainly Dispensary Area No. 2. There are three houses on the estate for male employees.

The weekly maintenance charge for 1937-38 was £2 19s. 10d. per patient, which includes 12s. 2d. for loan charges.

The average length of stay of patients at Withnell during 1937 was as under :—

Patients discharged	.....	168 days.
Patients who died in the hospital	.....	197 days.
Observation cases discharged	.....	30 days.
Observation case which died in the hospital	.....	21 days.

Dr. MacPhee reports :—

During the year, 93 patients were admitted to the institution, 61 discharged, and 31 died; in addition, 7 cases were sent in for observation and diagnosis, 9 were discharged (4 of which were diagnosed as tuberculous and 1 died of other than tuberculosis. The percentage of beds occupied during the year was 96·77.

It will be observed that there is rather a high percentage of deaths to admissions—32 per cent. As in former reports, I would point out, however, that where the home circumstances were not satisfactory, advanced and dying cases were encouraged to remain in the institution. This undoubtedly added to the work of the staff but, on the other hand, from the public health point of view is to be encouraged.

In the x-ray department, 140 screenings were made and 248 skiagrams taken in respect of institutional patients; in addition, 23 screen examinations were made and 5 skiagrams taken of dispensary patients who for convenience attended the hospital as out-patients.

With regard to treatment, the basic sanatorium routine, with regulated rest as its most important factor, was carried out generally, and the following statement shows the special treatment and clinical methods undertaken in selected cases during the year :—

Artificial pneumothorax—						
Inductions	.....	.....	.....	.....	.....	12
Refills	.....	.....	.....	.....	.....	98
Gas replacements	.....	.....	.....	.....	.....	1
Gold salts—						
Solganal injections	.....	.....	.....	.....	.....	24
Aspirations	.....	.....	.....	.....	.....	10
Blood sedimentation tests (Cutler's method)	.....	.....	.....	.....	.....	10
Mantoux tests	.....	.....	.....	.....	.....	3
Lipiodol injections	.....	.....	.....	.....	.....	2
X-ray work—						
Screen examinations	.....	.....	.....	.....	.....	140
Skiagrams	.....	.....	.....	.....	.....	248
Sputum examinations (positive 302, negative 409)	.....	.....	.....	.....	.....	711
Specimens sent to Public Health Laboratory	.....	.....	.....	.....	.....	21

Numbers of patients in Withnell afforded special treatment for the first time during 1937 :—

Artificial pneumothorax—						
Attempted	.....	.....	.....	.....	.....	12
Satisfactory	.....	.....	.....	.....	.....	5
Unsatisfactory	.....	.....	.....	.....	.....	7
Gold salts (solganal)	.....	.....	.....	.....	.....	3
Collison's inhalation treatment	.....	.....	.....	.....	.....	10

On the 31st December, 1937, four patients were having special treatment (namely, artificial pneumothorax).

The two structural improvements commenced in the previous year, namely, the sleeping pavilion of eight cubicles and the wooden pavilion containing dining rooms for the nursing and the domestic staffs, have been completed, and provide a useful addition to the institution.

To replace the x-ray apparatus, which had been in use since the opening of the hospital, the plant at the Accrington Chief Dispensary was transferred in July, 1937, to Withnell. This apparatus is in excellent condition and produces very satisfactory skiagrams.

Occupational therapy was carefully organised according to the capabilities and requirements of the individual patients, and included work in the garden, joinery and assisting the engineer. For those less able, lighter domestic duties were engaged in.

Outdoor and indoor recreation, with suitable seasonal entertainments, were encouraged and provided for the patients. Generally speaking, either a concert or a cinematograph entertainment was given once a week. I now thank the many friends who came to the institution with concert parties; their efforts were all voluntary. Regarding these entertainments, I would make special mention of the co-operation of the Accrington Dispensary staff with that of Withnell. A comedy was successfully staged by the combined staffs at Christmas, and was repeated to an audience of patients and their friends. By special request it was also given to the patients and staffs at the Wolstenholme and Rufford Pulmonary Hospitals. I record the kindly enthusiasm of the matron in encouraging entertainments on the patients' behalf.

As in former years, the libraries of both patients and staff have been considerably augmented.

The patients' annual motor-coach outing organised by the matron was again enthusiastically enjoyed.

With regard to religious services, the institution was visited on alternate Sundays by the Rev. S. J. Archer and the Rev. J. T. Bone, and also at regular intervals by the Rev. T. Carney. On behalf of the patients and staff, I wish to express indebtedness to these gentlemen for their spiritual ministrations.

Lectures to the staff were given by Dr. Whyte, Dr. Hughes and myself; two nurses were prepared for the examination of the Tuberculosis Association.

The hospital was honoured by visits from the following: County Councillor Canon A. Kershaw, Whitefield; County Councillor R. B. Yates, Darwen; Dr. R. J. Matthews, Welsh Board of Health; and Dr. J. E. Chapman, Ministry of Health.

I have again to record my appreciation of the assistance given by my medical colleagues, the matron and the staff.

SUMMARY OF DISPENSARY WORK.

Number of tuberculous cases under supervision on 31st December, 1937

(Definitely tuberculous, 1,005; doubtful, 2)					<u>1,007</u>
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	Examinations of <i>new persons</i> and <i>new contacts</i> for diagnosis.	Re-visits or re-attendances of " <i>old</i> " <i>cases</i> and " <i>old</i> " <i>contacts</i> .
Examinations by tuberculosis officer at—		
Patients' homes	173	211
Accrington Chief Dispensary	413	1,135
Darwen Branch Dispensary.....	111	270
Nelson Branch Dispensary	201	477
Stacksteads Branch Dispensary	136	452
	861	2,334
Attendances of patients at dispensaries for artificial light treatment—		
Accrington Dispensary (44 individual patients)	2,067	5,503
Nelson Dispensary (29 individual patients)	1,262	
Stacksteads Dispensary (33 individual patients)	2,174	
Attendances for artificial pneumothorax treatment (22 individual patients)		261
Attendances for tuberculin treatment		204
Mantoux tests		4
Lectures or addresses given		5
Visits by tuberculosis officers to sanatoria, and pulmonary, special, and public assistance hospitals		64
Special visits by tuberculosis officers (<i>i.e.</i> , interviews with medical officers of health, general hospital officials, &c.)		20
Visits by dispensary nurses to patients' homes—		
Routine visits.....	7,111	8,029
Application of surgical dressings	209	
Adjustment of splints and surgical appliances	237	
Other actual nursing	472	
Patients' dispensary attendances for attention by nurses—		
Application of surgical dressings	1,003	1,125
Adjustment of splints and surgical appliances	122	
Sanitary defects reported to the local medical officers of health		15
Sanitary defects which after notification were remedied		15
Disinfections carried out by local sanitary authorities		1,236
Percentage of new cases referred by medical practitioners, &c., to tuberculosis officer for an opinion as to diagnosis or treatment <i>before</i> statutory notification		96.6%

XVI.—DISPENSARY AREA No. 3
(including Wolstenholme Pulmonary Hospital).

Area (estimated population 379,773) embraces Ramsbottom, Littleborough, Radcliffe, Heywood, Crompton, Royton, Prestwich, Middleton, Chadderton, Failsworth, Ashton-under-Lyne, Mossley, and Denton districts.

Consultant Tuberculosis Officer DR. G. FLETCHER.
(Dr. Fletcher is also visiting medical superintendent of the Wolstenholme Pulmonary Hospital).

Assistant Tuberculosis Officers DR. J. L. ARMOUR.
DR. W. FETTES.

Dr. Fletcher reports :—

During the year work has been in progress on the new dispensary in Lees Street, Ashton-under-Lyne, and it is expected to be ready for occupation at the end of 1938.

I addressed the Ashton-under-Lyne Rotary Club in February, giving an account of the work of a tuberculosis officer in Lancashire.

During the year, the Ashton-under-Lyne and District Tuberculosis Care Committee assisted 84 cases at a cost of £293 16s. 11d. In other districts not covered by voluntary care committees, 53 cases were assisted at a cost of £190 13s. 5d. through the County care fund. The Ashton-under-Lyne Care Committee held its annual dance in the Town Hall in November and the funds benefited to the extent of £26 4s. 6d.

The Christmas party given to the children at Ashton-under-Lyne Dispensary was, as usual, a great success. County Councillor J. Kershaw, a member of the County Tuberculosis Committee, kindly attended.

During the year, 1,883 skiagrams were taken at Ashton-under-Lyne Dispensary as compared with 1,703 in 1936. At this dispensary also, 1,297 specimens of sputum were examined, 319 being positive and 978 negative.

The light centre at Ashton-under-Lyne continued its work on the same lines as formerly. The number of patients treated remains much the same as in former years, and the methods of treatment continue to

give satisfactory results. These remarks apply also to the Radcliffe light centre. Observation visits were paid to the Ashton-under-Lyne and Radcliffe Dispensaries by 94 cases which had been successfully treated by artificial light.

Monthly consultations were held with the medical superintendents at Aitken, Springfield, and Halifax Sanatoria and Chadderton Pulmonary Hospital.

I have again to thank all the members of my staff—medical, nursing, and clerical—for their loyal assistance during the year, and to express my appreciation of the continued co-operation of the medical practitioners in this area.

WOLSTENHOLME PULMONARY HOSPITAL, NORDEN.

Matron MISS E. G. GLASS.

The County Council, on the 1st July, 1933, took over from the Rochdale Corporation, Wolstenholme Hall, Norden, which had been used by them as a pulmonary hospital for 45 adult male patients of whom 25 to 30 were sent by the County Council. The estate is situated on the Edenfield road, $3\frac{1}{2}$ miles west of Rochdale, and contains $7\frac{1}{4}$ acres of land with two cottages and outbuildings. The County Council have erected entirely new buildings for the treatment of 55 male patients accommodated as under :—8 in single cubicles, 20 in double cubicles, 23 in five wards, and 4 in double sleeping shelters. The new buildings contain an x-ray room, dark room, laboratory, operating theatre, sterilising room, dining room, servery, two nurses' duty rooms, two linen stores, patients' locker rooms, sluice rooms, and lavatory accommodation. A recreation room, reading room, and dressing rooms have been provided in a separate building. The Hall has been adapted for housing the nursing and domestic staffs and for other administrative purposes.

The capital cost of the scheme was £17,811 10s. 0d., representing £324 per bed.

The weekly maintenance charge for 1937-38 was £2 12s. 2d. per patient, which includes 9s. 7d. for loan charges.

Of the 55 beds, the County Council have undertaken to lease to the Rochdale Corporation 25 beds.

The average length of stay of patients at Wolstenholme during 1937 was :—

Patients discharged	.....	.....	.....	.....	.....	154 days.
Patients who died in the hospital	.....	.....	.....	.....	.....	87 days.
Observation cases discharged	.....	.....	.....	.....	.....	25 days.

A motor ambulance is available at the hospital.

Dr. Fletcher reports as follows :—

During the year, 104 County patients were admitted, 57 were discharged, 11 were transferred to other institutions, and 28 died ; in addition, 4 observation cases were admitted, 2 were accepted as tuberculous and 2 were discharged as non-tuberculous.

During the year, the institution was visited by County Councillors Canon A. Kershaw, E. Clegg, and H. Bright of the County Tuberculosis Committee, while quarterly visits were made by members of the Rochdale Health Committee who were accompanied by their medical officer of health.

Lectures were delivered to the junior nurses on anatomy and physiology, and to the senior nurses on tuberculosis. One nurse passed the first part of the Tuberculosis Association examination, and two nurses the second part.

The majority of our patients are not fit for any work, but such as are able engage in light work in connection with the wards, while a few who are fit to be so employed assist in the garden or the workshop.

The library continues to be well patronised by the patients, and we are thankful for gifts of books from various friends and for the grant by the County Tuberculosis Committee.

The religious needs of the patients were ministered to by the Rev. H. Patrick and Father O'Sullivan, to whom we are grateful for their services. A Confirmation service was held by the Bishop of Hulme.

Mr. C. Fearn attended the institution at intervals to give dental treatment to such patients as were in need of it.

In the matter of recreation, our patients are exceptionally well catered for. The patients' social club continues its useful work, and many entertainments were given by outside friends which helped to make

the patients' stay in the institution more agreeable. In this connection we are grateful to, among others, the members of the Norden Church Bible Class, to Toc H, and to Stand Church Concert Party. The Coronation and Christmas celebrations went off successfully, and there was a patients' outing to Buxton. The annual garden party was also a successful venture.

My thanks are due to the matron for her loyal and able help.

Details of work carried out at Wolstenholme during 1937 :—

Artificial pneumothorax—	
Inductions	14
Refills	91
Gold salts—	
Sanocrysin injections	228
Blood sedimentation tests (Cutler's method)	128
X-ray work—	
Screen examinations	133
Skiagrams	242
Sputum examinations (positive 210, negative 191)	401

Numbers of patients afforded special treatment in the hospital for the first time during 1937 :—

Artificial pneumothorax—	
Attempted	14
Satisfactory	6
Unsatisfactory	8
Gold salts (sanocrysin)	13

Numbers of patients in the hospital on the 31st December, 1937, who were having special treatment :—

Artificial pneumothorax	4
Gold salts (sanocrysin)	4

SUMMARY OF DISPENSARY WORK.

Number of tuberculous cases under supervision on 31st December, 1937
(Definitely tuberculous, 1,522 ; doubtful, 0)

1,522

Examinations by tuberculosis officer at—	Examinations of <i>new persons</i> and <i>new contacts</i> for diagnosis.	Re-visits or re-attendances of " <i>old</i> " cases and " <i>old</i> " <i>contacts</i> .
Patients' homes	191	354
Ashton-under-Lyne Chief Dispensary	554	2,281
Chadderton Branch Dispensary	256	1,027
Middleton Branch Dispensary	60	320
Radcliffe Branch Dispensary	195	695
Rochdale Branch Dispensary	143	507
	<u>1,208</u>	<u>4,830</u>

Attendances of patients at dispensaries for artificial light treatment—			
Ashton-under-Lyne Dispensary (118 individual patients)	.....	4,465	} 5,690
Radcliffe Dispensary (27 individual patients)	.....	1,225	
Attendances for artificial pneumothorax treatment (29 individual patients)			367
Attendances for moogrol (hydnocarpates) treatment	.....		32
Care committee meetings attended by—			
(a) Tuberculosis officers	.....		10
(b) Tuberculosis health visitors	.....		9
Lectures or addresses given	.....		1
Visits by tuberculosis officers to sanatoria, and pulmonary, special, and public assistance hospitals	.....		95
Special visits by tuberculosis officers (<i>i.e.</i> , interviews with medical officers of health, general hospital officials, &c.)	.....		4
Visits by dispensary nurses to patients' homes—			
Routine visits	.....	7,453	} 8,573
Application of surgical dressings	.....	289	
Adjustment of splints and surgical appliances	.....	395	
Other actual nursing	.....	436	
Patients' dispensary attendances for attention by nurses—			
Application of surgical dressings	.....	55	} 146
Adjustment of splints and surgical appliances	.....	91	
Sanitary defects reported to the local medical officers of health	.....		42
Sanitary defects which after notification were remedied	.....		12
Disinfections carried out by local sanitary authorities	.....		337
Percentage of new cases referred by medical practitioners, &c., to tuberculosis officer for an opinion as to diagnosis or treatment <i>before</i> statutory notification	.....		89.4%

XVII.—DISPENSARY AREA No. 4
(including Peel Hall Pulmonary Hospital),

Area (estimated population 369,354) embraces Westhoughton, Atherton, Farnworth, Leigh, Swinton, and Pendlebury, Eccles, and Stretford districts.

Consultant Tuberculosis Officer DR. G. JESSEL.
(Dr. Jessel is also visiting medical superintendent of the Peel Hall Pulmonary Hospital).

Assistant Tuberculosis Officers DR. A. B. JAMIESON.
DR. H. J. VILLIERS.

Dr. Jessel reports :—

The figures at the end of these notes give some idea of the extent of the work carried out in the area during 1937. In particular, they show, as compared with the previous year :—

1. An increase in the number of new persons examined from 1,078 to 1,114.
2. An increase in the number of specimens of sputum examined from 2,260 to 2,445.
3. An increase in the number of skiagrams taken from 1,229 to 1,339.

It is of interest in this connection, as showing the confidence of the local medical practitioners, that no less than 94·3 per cent. of the new tuberculous cases were referred to me before notification. The ability, easily and quickly, to obtain a radiological report, and a reduced print if the case is of sufficient interest, has undoubtedly contributed to the increasing use that is being made of the tuberculosis service by the doctors in the area. The use of x-ray needs commonsense and discretion, and radiology is not in itself a substitute for careful medical examination. On the other hand, early x-ray examination, because of the valuable information that can frequently be obtained therefrom, is nowadays essential.

The following quotation from a recent paper* is apposite : “ The disadvantages resulting from a reluctance to use x-rays are : (1) The longer time that is usually needed to reach a diagnosis, (2) the tendency to play for safety and to diagnose non-existent tuberculosis. Radiology is, moreover, particularly useful in aiding the differentiation of non-tuberculous chest conditions. On the other hand, radiology alone cannot be relied upon to provide an accurate diagnosis, and in many cases that present

*Jessel, G. : Presidential address to North Western Tuberculosis Society. *Brit.J.Tuberc.*, Jan., 1938, p.49.

difficulty the information supplied thereby is equivocal. For example, the x-ray appearances in cancer, tuberculosis, or silicosis may at times be indistinguishable. Likewise, an opacity may be due to fluid, a thickened pleura or underlying new growth. Consistently accurate diagnosis depends upon a careful appraisalment of all the available evidence, including history, clinical and laboratory examinations, as well as x-rays. It demands experience and judgment, for in some respects radiology has tended to make the diagnosis of chest diseases more difficult. This is particularly true as regards the few who cannot see the wood for the trees and confuse shadows of bronchi and bloodvessels, seen in their varied aspects and angles, with evidence of non-existent disease."

One striking feature of the past year has been the number of middle-aged persons of both sexes who have enjoyed fair health and worked regularly until about 50 years of age, when some complaint led the medical attendant to refer the case to me and evidence of tuberculous disease of long standing was found. The following are cases in point :—

E.N., female, aged 49. Said to have always been healthy until nine days ago when she had haemoptysis, after which she called in her own doctor. She had well-marked clinical evidence of tuberculous disease and tubercle bacilli were found in the sputum.

J.A., male, aged 56. First seen by tuberculosis officer in a general hospital to which he had been admitted on account of "cyst of cord—hydrocele." Man gave a history of having had testicular swelling, which disappeared, three years earlier, and said to have had a spontaneous pneumothorax seven years ago. A skiagram taken on 24-5-38 showed well-marked calcified nodules in the upper parts of both lungs.

In spite of all our efforts the average patient does not come under notice as an early case and it is doubtful whether, in existing conditions, there is likely to be much improvement in this respect. The symptoms of tuberculosis are usually insidious and frequently do not compel a patient's attention until the disease has secured a firm hold. Even routine compulsory medical examination would in many instances be fruitless as regards cases with acute onset, unless the examination coincided with the onset of illness. On the other hand, a more frequent medical overhaul of the general population could scarcely fail to be of value. Vehicles plying for public hire must be inspected annually ; it would appear that some extension of our medical system is desirable in order to deal more adequately with the prevention and beginnings of disease through more frequent medical examination. It is necessary to educate the public to become health-minded but not tuberculosis-minded. Much harm can be done by injudicious anti-tuberculosis campaigns, the main results of which may be to frighten the very people whose confidence we need to secure.

UNSUSPECTED CHRONIC TUBERCULOSIS.



E.1.—J.W., male, aged 45 years. Skiagram taken 10-3-38 shows extensive bilateral pulmonary tuberculosis with large cavity and fluid level in right upper zone. Tubercle bacilli in sputum. Patient gave history of chronic cough for some years—usually under doctor about twice a year for a fortnight. Was apparently well and working until about eight days before examination by tuberculosis officer. Father and two sisters said to have died from tuberculosis; another sister also has pulmonary tuberculosis.



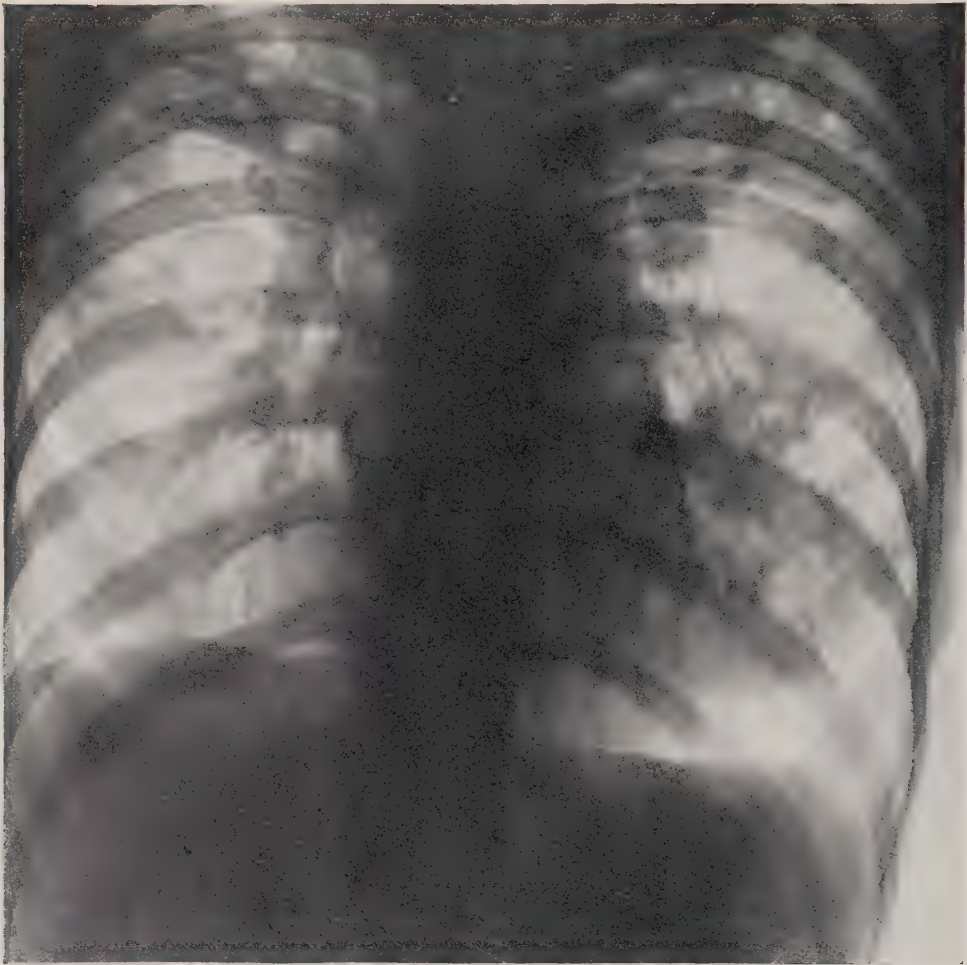
E.2.—W.J., male, aged 44 years. Skiagram taken 10-3-38 shows extensive disease in left lung; right lung fairly good. Tubercle bacilli in sputum. Said to have had "nephritis" eight years ago, and off work 16 weeks. Remained well until three months ago.

(Skiagrams taken at Eccles Dispensary).

RIGHT.

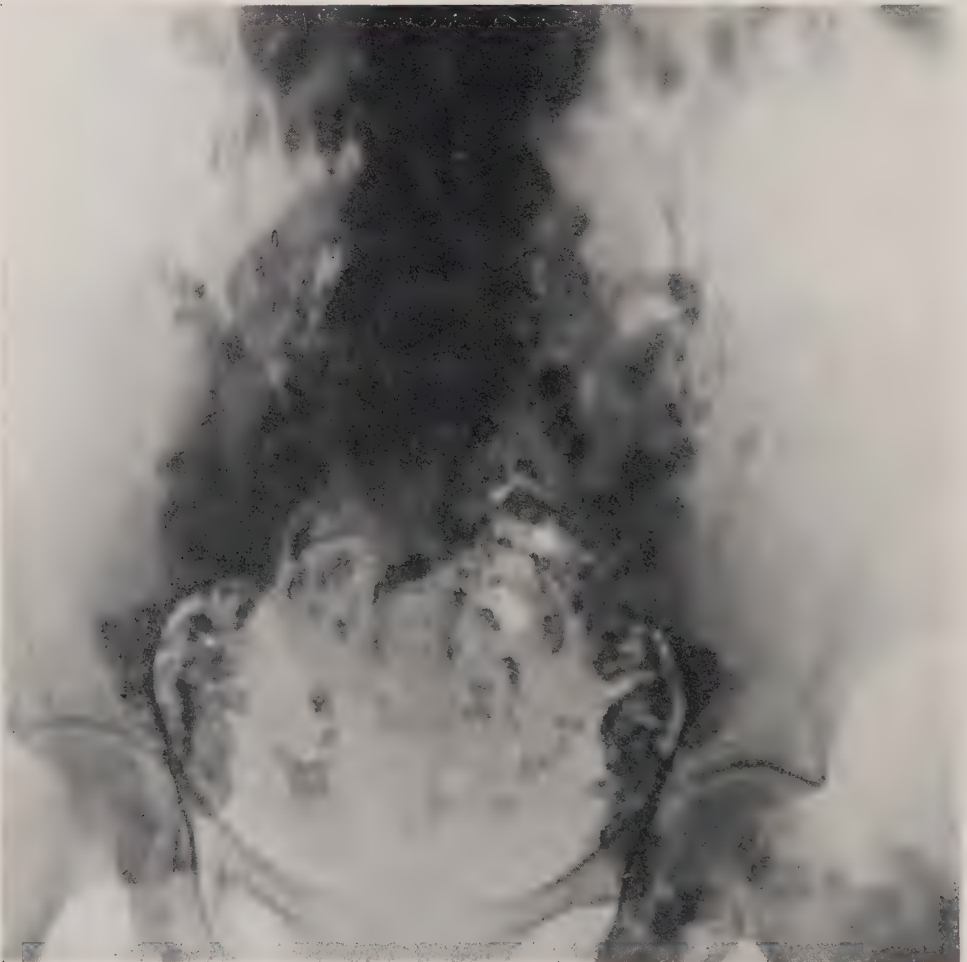
LEFT.

PULMONARY TUBERCULOSIS IN A PATIENT TREATED BY
OWN DOCTOR FOR "SEPTIC THROAT."



E.3.—E.J.P., female, aged 33 years. First examined by tuberculosis officer, November, 1937. Had been under own doctor 4-5 months on account of hoarseness. Later cough and loss of weight became noticeable. Referred to a general hospital for "septic throat." When examined by tuberculosis officer had crepitations chiefly in left front of chest and right back. X-ray shows extensive bilateral tuberculosis. Patient died one month later.

MASSIVE CALCIFIED GLANDS IN PELVIS, THE CAUSE OF
MARKED OEDEMA OF LEG.



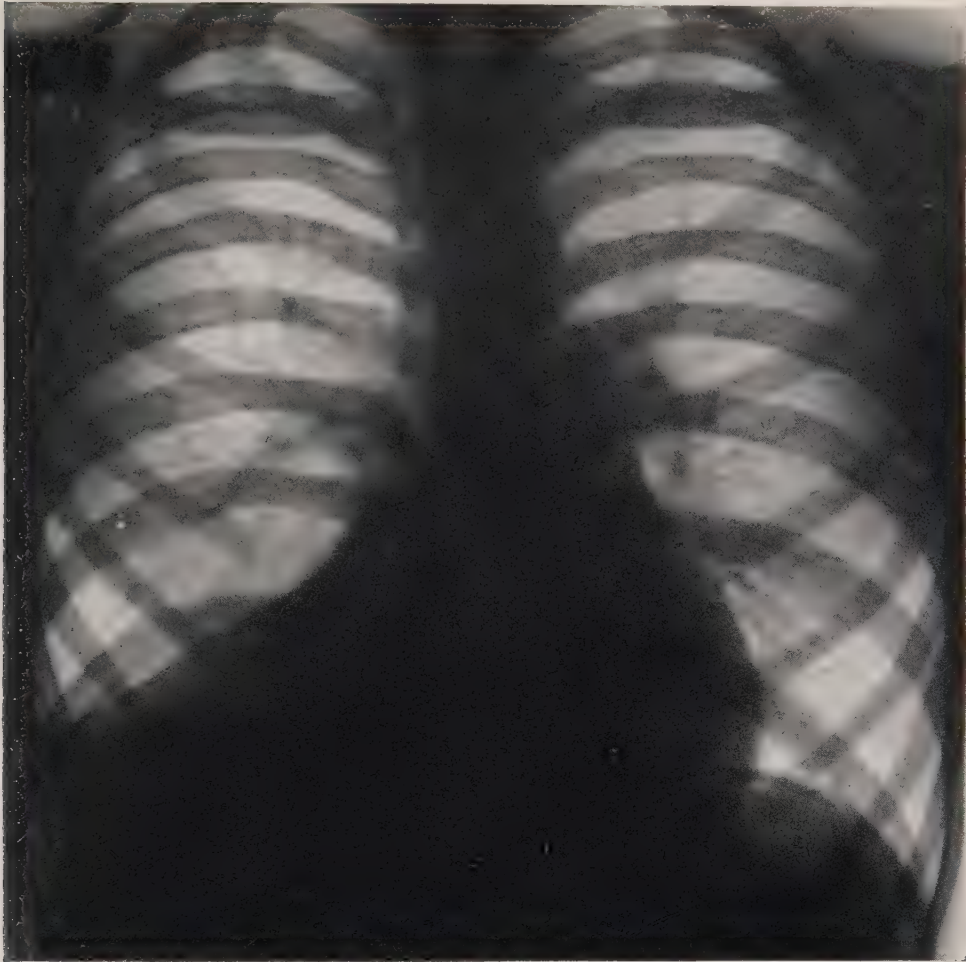
E.4.—J.L., female aged 32 years. First examined by tuberculosis officer in 1917 when she had tuberculous glands of neck and pulmonary tuberculosis (T.B. minus). Skiagram taken 7-10-37 (20 years later) shows masses of calcified glands in pelvis and on both sides of lumbar vertebrae, causing obstruction to the circulation which resulted in swelling of left leg from foot to top of thigh.

(Skiagrams taken at Eccles Dispensary).

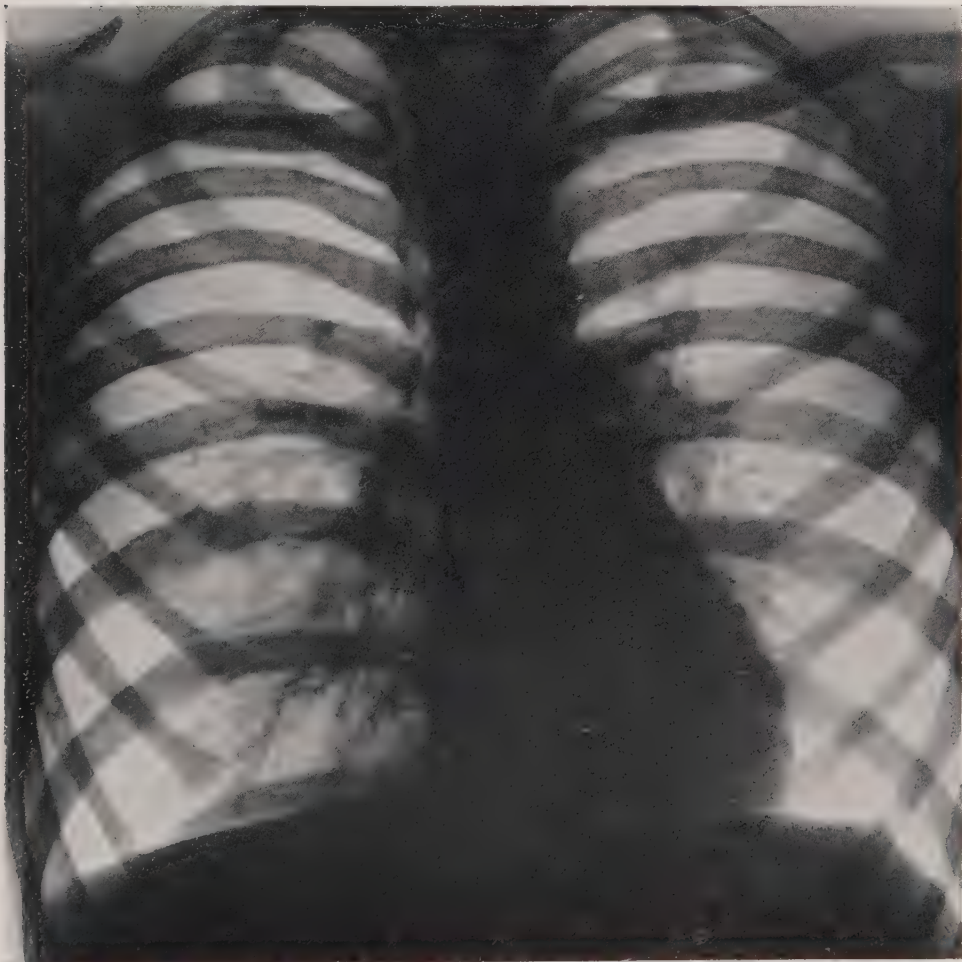
RIGHT.

LEFT.

ATELECTASIS OF INFLAMMATORY ORIGIN (NON-TUBERCULOUS).



E.5 (a).—J.W., male, aged 14 years. First seen by tuberculosis officer, March, 1938. History of measles, followed by pneumonia in infancy, and "pleurisy" twice. Had had bronchitis frequently since infancy. Now complained of cough, sputum, loss of weight, and night sweats. Three negative sputums were found. Physical signs : Thin, M.I. slight, breath sounds generally harsh ; loss of resonance r. base but breath sounds and tactile vocal fremitus present. Skiagram taken 22-3-38 shows the costo-phrenic sulcus on right side to be obliterated. Above the diaphragm there is a triangular shadow, base outwards, suggesting atelectasis.



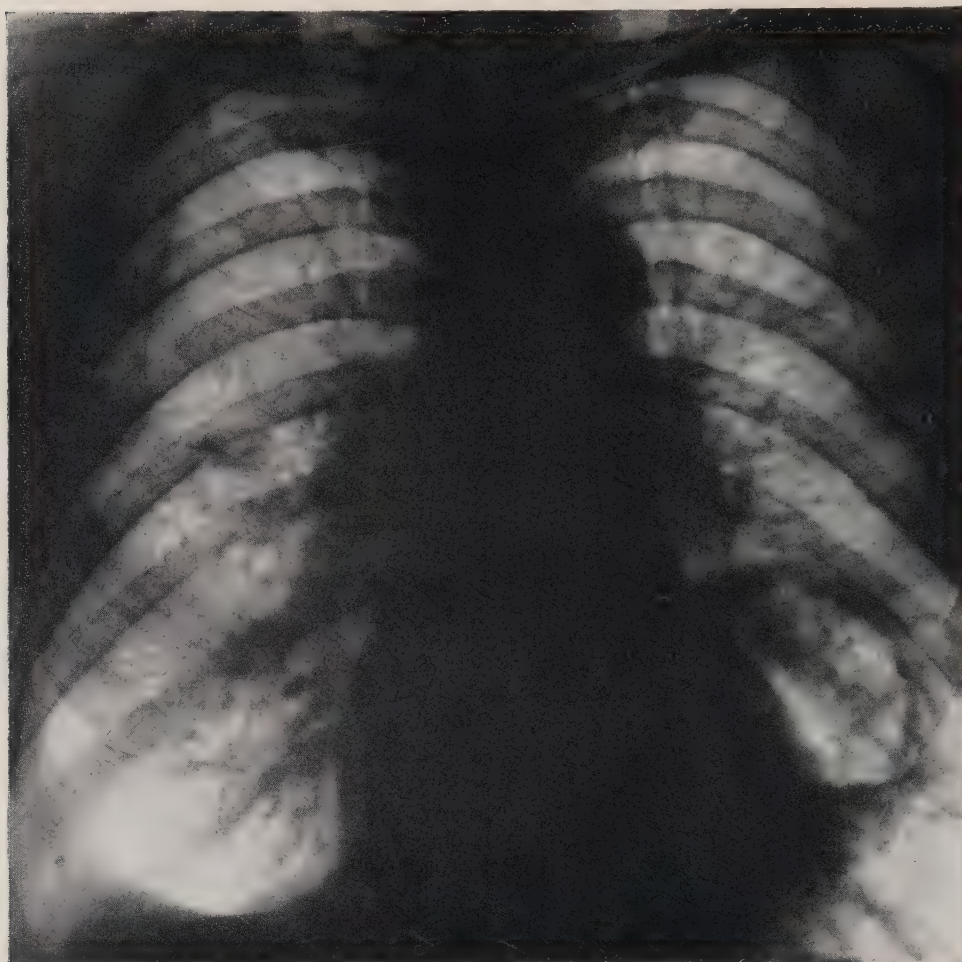
E.5 (b).—Same patient. Skiagram taken 7-4-38 shows that the opacity seen in the previous skiagram has now completely disappeared.

(Skiagrams taken at Eccles Dispensary).

RIGHT.

LEFT.

ABSCESS OF LUNG. TO SHOW VALUE OF OBLIQUE VIEW
IN MAKING DIAGNOSIS.



E.6 (a).—A.S., male, aged 59 years. In the left lower zone there is a very large, thick-walled cavity with fluid level. There is also a good deal of bronchitis and emphysema. Patient gave a history of having had pneumonia a few years ago. Expecterated a large quantity of sputum at intervals, mainly in the evenings. Sputum had a nasty taste.



E.6 (b).—Same patient. Skiagram (oblique view) shows cavity with fluid level more clearly. Sputum examinations were negative on 14 occasions. Diagnosis: Abscess of lung which probably emptied itself through a bronchus causing comparatively little discomfort.

(Skiagrams taken at Eccles Dispensary).

RIGHT.

LEFT.

PNEUMONIC CONDITION.



E.7 (a).—H.C., male, aged 23 years. Skiagram taken 25-1-38 shows a lack of translucency below the clavicle and extending down to the fourth rib on the left side. The extreme apex is clear.

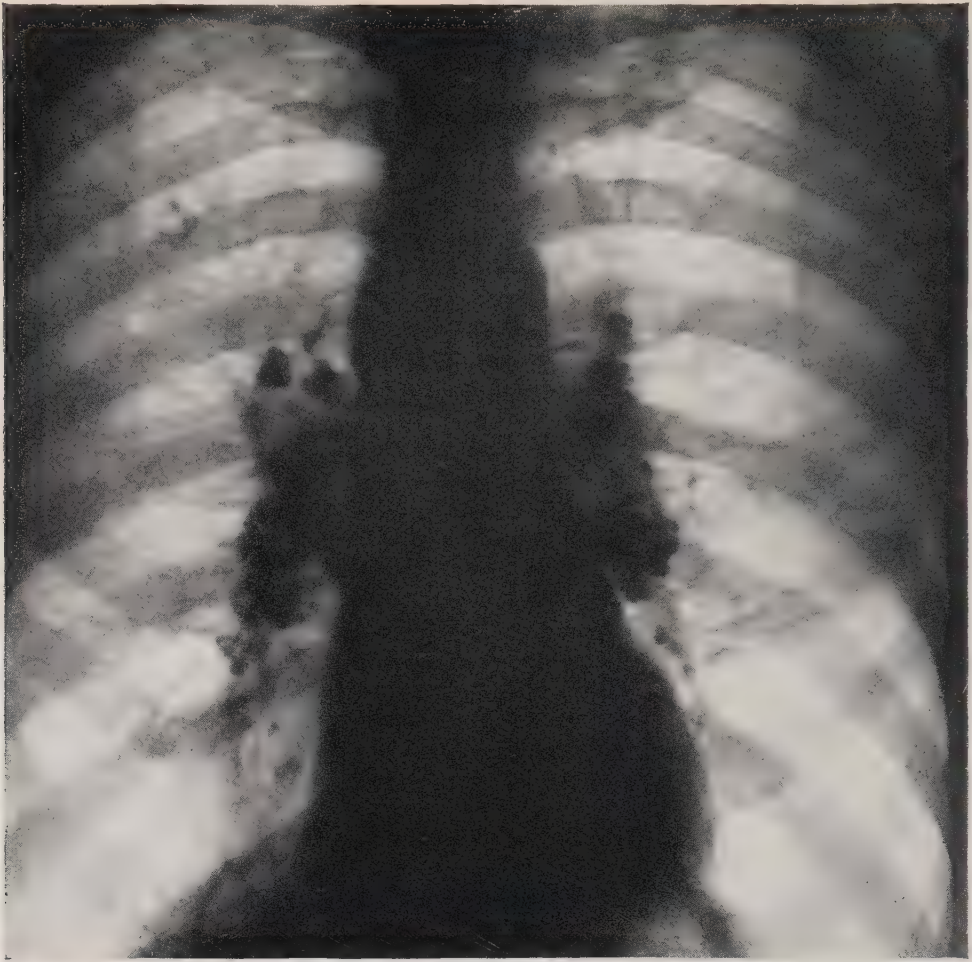


E.7 (b).—Same patient. Skiagram taken 8-2-38 shows that the disease seen in the left lung has practically disappeared. The man gave a history of having had pneumonia in 1935. The condition was evidently inflammatory or pneumonic.

(Skiagrams taken at Eccles Dispensary).

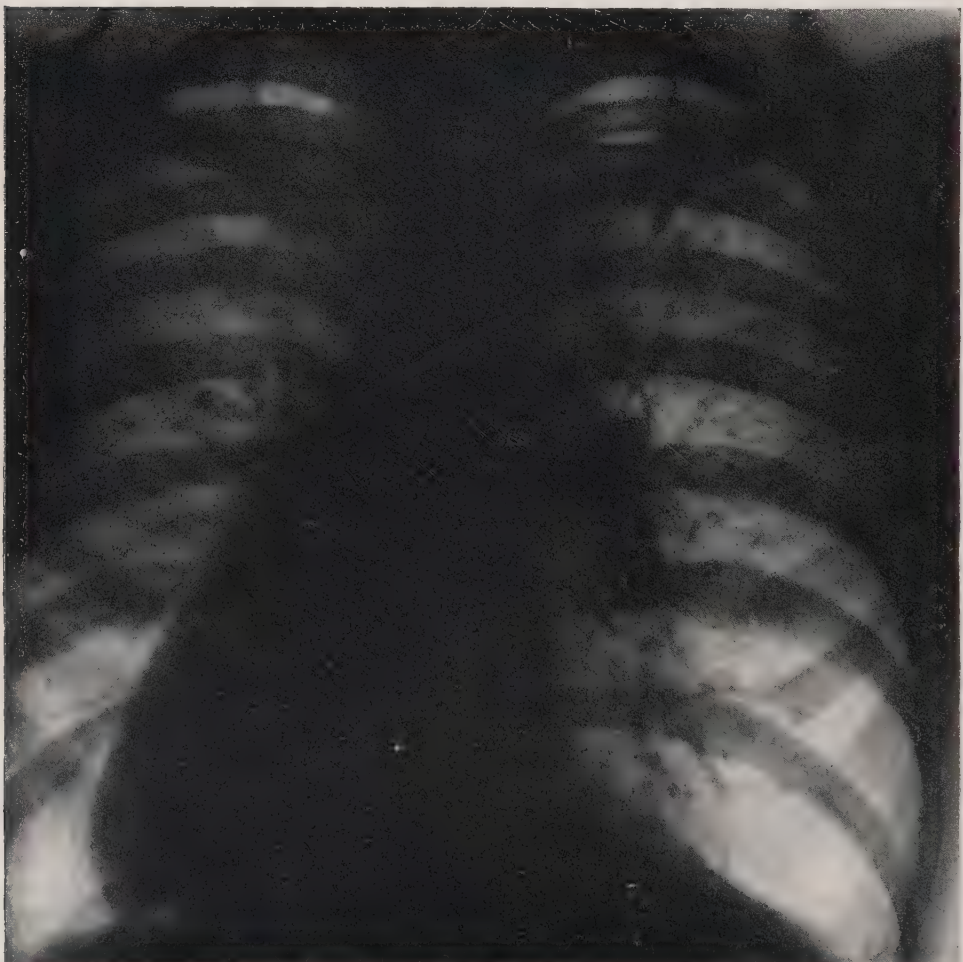
RIGHT.

LEFT.



E.8.—S.O., male, aged 56. First examined by tuberculosis officer April, 1938. History of being discharged from army on account of "gastric catarrh," ?tuberculous bowels. Was in sanatorium 18 years previously when residing in Wales. Was in another sanatorium on three occasions, the last time being 12 years ago. Complained of pain in r. back, shivering, malaise, and vomiting; now improving, cough and sputum less. Sputum negative (three specimens). Skiagram shows massive calcareous glands at both hila.

TRANSPOSITION OF VISCERA.



E.9.—E.B., male, aged 42 years. Patient was first referred to tuberculosis officer in 1921 and again in February, 1938. Skiagram shows transposition of viscera with bronchitis. Note heart on right side.

(Skiagrams taken at Eccles Dispensary).

RIGHT.

LEFT.

NON-TUBERCULOUS FIBROSIS.



E.10.—E.B., female, aged 32 years. First referred to tuberculosis officer, January, 1937, when she complained of chronic cough since measles in infancy. Had cough, sputum, dyspnoea with blood-spitting now for about a month. Skiagram taken 12-1-37 shows marked fibrosis of right lung, with deviation of heart to right. Referred to tuberculosis officer again in March, 1938. Had gained nearly a stone in weight since previous examination. Her condition had been more or less stationary. A second skiagram was similar to the previous one. Diagnosis : Non-tuberculous fibrosis.

(Skiagram taken at Eccles Dispensary).

RIGHT.

LEFT.

The care work has been steadily continued, and it is noteworthy that the voluntary organisations, working under the guidance of the tuberculosis officers, helped 210 persons at a cost of £356 15s. 1d., while 43 other patients received £117 12s. 0d. from the County care fund.

The artificial light department has continued to do good work and has been filled to capacity. It is pleasing to record a steady decline in the number of patients with lupus, which appears to be a disappearing disease. Gland cases are always with us and light treatment is undoubtedly superior to operation in most of these cases. Thereby, unsightly scarring, accompanied not infrequently by a recurrence under the scar, is avoided. Light treatment is, of course, accompanied by such ancillary measures, *e.g.*, creosote and salicylic plaster, aspiration, incision, division of bands, etc., as may be required.

Notes and illustrations of skiagrams of some interesting cases seen during the year are here inserted.

The endeavour to find improved accommodation, to replace the inconvenient and crowded dispensary at Eccles, has so far proved unsuccessful.

I cannot conclude without once again referring to the efficient team work which has pervaded the whole area.

PEEL HALL PULMONARY HOSPITAL, LITTLE HULTON.

Matron MISS E. SIMMONS.

The Hall, with about 17 acres of land attached thereto, was presented in 1914 to the Lancashire County Council by Mr. A. Wynne-Corrie, and an additional 20 acres of land, and later 8 acres, were purchased. The adaptation of the premises as a pulmonary hospital—delayed owing to the Great War—was completed in 1921.

The hospital, accommodating 57 adult males, serves principally Dispensary Area No. 4.

Mr. H. Morrision Davies is the visiting consulting chest surgeon.

A motor ambulance is provided, and is available also for conveying patients to and from other hospitals.

The weekly maintenance charge for 1937-38 was £2 14s. 5d. per patient; this includes 8s. 6d. for structural renewals and repairs, and 4s. 2d. for loan charges.

The average length of stay of patients at Peel Hall during 1937 was as under :—

Patients discharged	.....	.....	.....	.....	230 days.
Patients who died in the hospital	.....	.....	.....	.....	129 days.
Observation cases discharged	.....	.....	.....	.....	84 days.

Dr. Jessel reports :—

During 1937, 99 patients were admitted, 86 discharged, and 13 died ; in addition, one case sent in for observation was diagnosed as a definite case of tuberculosis.

The average length of stay of patients discharged during 1937 (*i.e.*, 230 days) is just double that for 1925. The striking increase suggests that patients are as happy and comfortable as sick people can be made, and this inference is borne out by the number of verbal and written expressions of appreciation that are received from time to time. Ample provision is made for all reasonable needs of patients, whether medical, social, or religious, and each year shows some improvement in one or other direction.

Although artificial pneumothorax and ancillary medical aids to treatment have been continued, in general the adherence to a policy of strict rest in bed, followed by a scheme of carefully supervised exercise, has been found the most important single factor in treatment. The use of sand-bags, placed for a certain number of hours per day on the chests of men in bed, has been an unqualified success, both physically and mentally.

In a small hospital where the patients are unselected the scope for chest surgery is necessarily limited. Mr. Morriston Davies, assisted by Mr. F. R. Edwards, has attended the hospital from time to time for phrenic nerve operations and division of adhesions.

The social club has done good work throughout the year, each season providing fresh activities for the men. At Christmas time the twelfth annual publication of *Our Mag* was issued ; a most welcome visit was paid by County Councillor Canon A. Kershaw, who was in time to see the elaborate decorations, and his wise and helpful words of encouragement were greatly appreciated. We have also had, as usual, a number of other visitors, including members of the College of Nursing (Bolton Branch) and of the British Red Cross Society (Walkden Branch).

The systematic courses of instruction for the nursing staff in preparation for the examinations of the Tuberculosis Association were continued.

As in former years, the matron (Miss Simmons), aided by Sister Minto, and the staff generally have evinced a genuine interest in the welfare of the patients and of the hospital. The intangible effect of human personality in medical and nursing relationships is well recognised, and in this respect we have been very fortunate at Peel Hall.

Details of work carried out at Peel Hall during 1937 :—

Artificial pneumothorax—	
Inductions	27*
Refills	463
Gas replacements	31
Division of adhesions	1
Phrenic nerve operations	8
Gold salts—	
Sanocrysin injections	25
Aspirations	5
Blood sedimentation tests (Westergren method)	392
X-ray work—	
Screen examinations	513
Skiagrams	571
Sputum examinations (positive 279, negative 345)	624

Numbers of patients afforded special treatment in the hospital for the first time during 1937 :—

Artificial pneumothorax—	
Attempted	25*
Satisfactory	14
Unsatisfactory	11
Phrenic evulsion, phrenicectomy, or phrenic crush	8

Numbers of patients in the hospital on the 31st December, 1937, who were having special treatment :—

Artificial pneumothorax	8
Phrenicectomy and artificial pneumothorax	2

* Two bilateral cases

SUMMARY OF DISPENSARY WORK.

Number of tuberculous cases under supervision on 31st December, 1937
(Definitely tuberculous, 1,493 ; doubtful, 0) 1,493

Examinations by tuberculosis officer at—	Examinations of <i>new persons</i> and <i>new contacts</i> for diagnosis.	Re-visits or re-attendances of " <i>old</i> " cases and " <i>old</i> " contacts.
Patients' homes	203	911
Leigh Chief Dispensary	263	1,001
Eccles Branch Dispensary	340	2,295
Farnworth Branch Dispensary	92	520
Pendlebury Branch Dispensary	47	460
Stretford Branch Dispensary	169	724
	<u>911</u>	<u>5,000</u>

Attendances of patients at the Eccles Dispensary for artificial light treatment (87 individual patients)	4,118
Attendances for artificial pneumothorax treatment (35 individual patients)	500
Sputum examinations—	
Total number of specimens examined	2,445
Number where tubercle bacilli were found	323
Number of specimens sent by medical practitioners	337
Number of these where tubercle bacilli were found	16
Pus examinations (positive 1, negative 23)	24
Blood sedimentation tests (Westergren method)	190
Mantoux tests	196
Contacts—	
Number of selected persons examined	113
Number of cases of tuberculosis found	3
X-ray work—	
Skiagrams—pulmonary 1,252, non-pulmonary 87*	1,339
Screenings	557
Care committee meetings attended by—	
(a) Tuberculosis officers	40
(b) Tuberculosis health visitors	49
Care work—	
Number of patients assisted by care committees and tuberculosis sections of civic guilds of help	210
Amount expended	£356/15/1
Number of patients assisted from County care fund	43
Amount expended	£117/12/0
Lectures or addresses given	1
Visits by tuberculosis officers to sanatoria, and pulmonary, special, and public assistance hospitals	89
Special visits by tuberculosis officers (<i>i.e.</i> , interviews with medical officers of health, general hospital officials, &c.)	20
Visits by dispensary nurses to patients' homes—	
Routine visits	8,861
Application of surgical dressings	180
Adjustment of splints and surgical appliances	287
Other actual nursing	326
Patients' dispensary attendances for attention by nurses—	
Application of surgical dressings	206
Adjustment of splints and surgical appliances	28
Sanitary defects reported to the local medical officers of health	22
Sanitary defects which after notification were remedied	16
Disinfections carried out by local sanitary authorities	480
Percentage of new cases referred by medical practitioners, &c., to tuber- culosis officer for an opinion as to diagnosis or treatment <i>before</i> statutory notification	94.0%

*Spine 28, hip 28, knee 8, ankle 6, wrist 5, elbow 3, foot 2, shoulder 2, hand 2, pelvis 2, finger 1.

XVIII.—DISPENSARY AREA No. 5
(including Rufford Pulmonary Hospital).

Area (estimated population 296,531) embraces West Lancashire Rural, Crosby, Litherland, Newton-in-Makerfield, Whiston Rural, Warrington Rural, and Widnes districts.

Consultant Tuberculosis Officer DR. C. W. LAIRD.
(Dr. Laird is also visiting medical superintendent of the Rufford Pulmonary Hospital).

Assistant Tuberculosis Officers DR. C. BERRY.
DR. J. N. WHYTE.

Dr. Laird reports :—

The work done in the area during 1937 has differed little in character from that of recent years.

At the Seaforth Chief Dispensary, bacteriological and radiological examinations have been carried out as heretofore. The extent of this work was : Sputum examinations, 1,151 (335 being positive) ; skiagrams 1,170 ; screenings 607 ; in addition, 34 screenings were made and 27 skiagrams taken at the Rufford Pulmonary Hospital in respect of dispensary patients who for convenience attended that hospital as out-patients. Patients requiring a continuation of artificial pneumothorax treatment are dealt with at Seaforth Dispensary. Here, too, as in the branch dispensaries at Widnes, St. Helens, and Huyton, special tests are made and accessory forms of treatment given.

Building operations in connection with a new dispensary at Widnes were begun during the year. It is intended to instal an x-ray plant in this dispensary, thereby facilitating more rapid diagnosis and providing radiological control in artificial pneumothorax treatment. Such measures will have several advantages : Patients will be spared much inconvenience in travelling to Seaforth as is at present required ; many whose condition is such that they are unable to make the longer journey may obtain the benefit of x-ray investigation and special treatment nearer home ; the County Council, moreover, will no longer have to defray the cost of fares to Seaforth for many who cannot pay ; and the chief dispensary will be relieved of occasional congestion.

New premises were acquired for a tuberculosis dispensary at Huyton, in the form of a commodious and well-appointed private dwelling in a central position, which was opened in November, 1937. The rapidly-growing needs of the Huyton district, consequent on expansion of the Liverpool housing estate, rendered the provision of such a centre necessary. In the course of the last few years the population has advanced from 5,000 to 33,000 (June, 1938) and in the near future is expected to reach or even exceed 50,000. Unfortunately, a goodly proportion of this sudden influx is made up of the less fortunate members of the community and of those who are disinclined or unable to co-operate with the tuberculosis staff in efforts intended for their welfare. Here again, the convenience of both patients and staff has been studied by obviating the need for attendance at a centre more remote.

For some time past the existing dispensary at Seaforth, which has served a useful purpose for almost a quarter of a century, has proved inadequate in the light of modern requirements. It was decided, therefore, to seek a better position and greater accommodation elsewhere, with the result that a more suitable building has now been secured in the adjoining district of Waterloo.

At St. Helens Branch Dispensary, where ultra-violet light treatment is given, the equipment consists of two "Sunrae" carbon arc lamps and one Kromayer mercury vapour lamp. The number of patients who received light treatment during the year was 74—11 children and 5 adults continuing from the previous year, and 39 children and 19 adults commencing in 1937. Patients suffering from adenitis formed the majority of the cases treated; skin cases are less numerous than formerly. During the year, 21 children and 3 adults concluded light treatment with the disease quiescent.

As regards other changes in the area in 1937, I have to refer to Dr. Whyte's transfer on the 1st December for whole-time duty in view of the growing demands for special treatment and increase in the general scope of the organisation; previously he devoted two days per week to this area. In January, Miss Duncan resigned her post as health visitor on marriage, and, to fill the vacancy thus created, Miss Corfield was transferred from Dispensary Area No. 4.

Under the arrangements made with the National Association for the Prevention of Tuberculosis, Dr. J. H. Harley Williams, the Medical Commissioner of the Association, gave four addresses in Widnes on the 9th March dealing with the prevention and treatment of the disease. Three of these were delivered during the day to groups of school children

and the fourth was given in the evening in the Wade Deacon Hall of the Municipal Technical College to a large and representative meeting open to the general public, presided over by County Alderman J. H. Smith, Chairman of the County Finance Committee. Much interest was manifested in these addresses, as was seen by the attendances—over 2,600—which were the largest in the Association's experience for many years. The lectures were illustrated by cinematograph films, and proved to be a great success.

The local care committees continue to carry out their useful work in Widnes, Earlestown, Prescott, and Huyton. The members of the Widnes Committee paid a visit to the Rufford Hospital on the 25th May; the party included Mrs. Hanley, J.P., the Mayoress of Widnes, who is also the Chairman of the Committee.

RUFFORD PULMONARY HOSPITAL, NEAR ORMSKIRK.

Matron MISS S. HOLMES.

The County Council acquired, on the 18th October, 1920, Rufford New Hall, situated on the west side of the main road from Preston to Ormskirk, together with 128 acres of land adjoining the Hall. Under pressure from the Ministry of Health, a scheme was prepared for using the Hall and land for discharged sailors and soldiers, which included training the patients in several occupations. Some additional land was also obtained with a view to training in agricultural work, but all this, however, was abandoned in 1921 by order of the Ministry of Health, owing to financial stringency. The premises, first used as a pulmonary hospital on the 7th April, 1926, provide accommodation for 52 female patients.

The hospital serves as far as possible the districts in west Lancashire, so that relatives and friends will have reasonable facilities for visiting.

The weekly maintenance charge for 1937-38 was £2 13s. 11d. per patient, which includes 5s. 3d. for loan charges.

The average length of stay of patients at Rufford during 1937 was as under :—

Patients discharged	.....	.....	.....	.....	.....	214 days.
Patients who died in the hospital	.....	.....	.....	.....	.....	99 days.
Observation cases discharged	.....	.....	.....	.....	.....	31 days.

Dr. Laird reports as follows :—

In 1937, 90 patients were admitted to the hospital, 76 were discharged, and 15 died ; in addition, 3 cases were admitted for observation and diagnosis, 2 were discharged as non-tuberculous, and one left the hospital before a definite diagnosis was made.

The usual methods of treatment were followed. Special measures adopted included artificial pneumothorax and gold therapy. The former was supplemented in several instances by the transfer of cases temporarily to High Carley Sanatorium for thoracoplasty and division of adhesions.

As regards results, there is little room for doubt that where a combination of gold treatment and collapse therapy has been pursued the response has been in the main more satisfactory. It is noteworthy that many patients, who at first had artificial pneumothorax only, have observed and manifested a definite improvement in well-being and general progress from the date on which gold preparations have been given as an additional measure. The dosage of gold salts is conservative rather than liberal. Reactions have been exceptional and when present were often attributable to causes other than gold. Owing to the system adopted the course is somewhat prolonged and necessarily entails further institutional treatment, as aurotherapy is not undertaken outside the hospital. The results, however, are on the whole gratifying, and perhaps the greater length of residence under good conditions is an appreciable factor.

Three concerts were given by private parties whose efforts to entertain the patients were much appreciated. On the Kodascope, hired films were exhibited during the winter months at fortnightly intervals.

Special visits in the course of the year included one by the Widnes After-care Committee on the 25th May, and another of importance was that made by the Southport Branch of the College of Nursing in the month of June.

Lectures were given by Dr. Berry to those members of the nursing staff who were preparing for the examination for the Tuberculosis Association's certificate.

The usual grants made by the County Council for extra fare at Christmas and also for Coronation celebrations were very much appreciated by patients and staff.

I have again to thank the matron and nursing staff for their efficient co-operation in the matter of treatment and for the interest taken in promoting the comfort and happiness of the patients in their care.

Details of work carried out at Rufford during 1937 :—

Artificial pneumothorax—	
Inductions	18
Refills	363
Gas replacements	9
Gold salts—	
Sanocrysin injections	728
Crisalbine injections	349
Aspirations	18
Pleural irrigations	3
Blood sedimentation tests (Cutler's method)	156
X-ray work—	
Screen examinations	730
Skiagrams	277
Sputum examinations (positive 384, negative 197)	581

Numbers of patients afforded special treatment in the hospital for the first time during 1937 :—

Artificial pneumothorax—	
Attempted	18
Satisfactory	11
Unsatisfactory	7
Gold salts (sanocrysin and crisalbine)	39

Numbers of patients in Rufford on the 31st December, 1937, who were having special treatment :—

Artificial pneumothorax	6
Artificial pneumothorax and gold salts	1
Gold salts	7

SUMMARY OF DISPENSARY WORK.

Number of tuberculous cases under supervision on 31st December, 1937
(Definitely tuberculous, 1,169 ; doubtful, 8) 1,177

Examinations by tuberculosis officer at—	Examinations of <i>new persons</i> and <i>new contacts</i> for diagnosis.	Re-visits or re-attendances of " <i>old</i> " cases and " <i>old</i> " contacts.
Patients' homes	144	511
Seaforth Chief Dispensary	428	1,770
*Huyton Branch Dispensary.....	9	88
St. Helens Branch Dispensary	105	747
Widnes Branch Dispensary	212	1,030
	<u>754</u>	<u>3,635</u>

* New dispensary, 95, Blue Bell Lane, Huyton, opened 18th November, 1937.

Attendances of patients at the St. Helens Dispensary for artificial light treatment (72 individual patients)	2,475
Attendances for artificial pneumothorax treatment (49 individual patients)	485
Attendances for eulykol (hydnocarpates) treatment	66
Mantoux tests	102
Care committee meetings attended by tuberculosis health visitors	22
Lectures or addresses given	1
Visits by tuberculosis officers to sanatoria, and pulmonary, special, and public assistance hospitals	60
Special visits by tuberculosis officers (<i>i.e.</i> , interviews with medical officers of health, general hospital officials, &c.)	11
Visits by dispensary nurses to patients' homes—	
Routine visits	4,797
Application of surgical dressings	120
Adjustment of splints and surgical appliances	114
Other actual nursing	15
	5,046
Patients' dispensary attendances for attention by nurses—	
Application of surgical dressings	574
Adjustment of splints and surgical appliances	6
	580
Sanitary defects reported to the local medical officers of health	75
Sanitary defects which after notification were remedied	48
Disinfections carried out by local sanitary authorities	359
Percentage of new cases referred by medical practitioners, &c., to tuberculosis officer for an opinion as to diagnosis or treatment <i>before</i> statutory notification	86.8%

XIX.—HIGH CARLEY SANATORIUM, OUBAS HOUSE CHILDREN'S SANATORIUM, AND FURNESS DISPENSARY AREA.

Medical Superintendent DR. G. LEGGAT.

(Dr. Leggat is also visiting medical superintendent of Oubas House Children's Sanatorium, Ulverston, and consultant tuberculosis officer for the Furness Dispensary Area—i.e., the area around the sanatorium—containing a population of 38,034).

Visiting Consulting Chest Surgeon MR. H. MORRISTON DAVIES.

Junior Visiting Consulting Chest Surgeon MR. F. R. EDWARDS.

Visiting Anaesthetist DR. J. HALTON.

Assistant Medical Superintendent DR. D. O. HUGHES (to 30/11/37)
DR. C. V. STEVENSON
(temporarily from 1/12/37, permanently from 1/3/38).

Junior Assistant Medical Officer DR. G. A. WILTHEW
(from 15/2/38).

Matron MISS E. WOOSEY.

(The matron is also responsible for the Oubas House Children's Sanatorium, Ulverston).

HIGH CARLEY SANATORIUM, NEAR ULVERSTON.

High Carley Sanatorium is situated about three miles west of Ulverston, to the south of the main road to Barrow-in-Furness. The buildings stand in 23 acres of ground, and accommodation is provided for 130 patients (60 males and 70 females) in 37 double cubicles, 22 single cubicles, 4 six-bed wards, and 5 double sleeping shelters.

The medical superintendent and the junior assistant are accommodated on the estate; and seven houses are provided in the vicinity of the sanatorium for the male employees.

Electricity is obtained from the public supply.

A treatment block was built in December, 1932, and contains on the ground floor an operating theatre, waiting and anaesthetic room, sterilising room, recovery room, artificial light room with a room adjoining for the sister, laboratory, x-ray room, dark room and sluice room; on the first floor five bedrooms and a sick room are provided for the staff.

The County Council in May, 1937, approved the sum of £18,633 for the following improvements and extensions, the work on which was commenced in July, 1937 :—

Extension to treatment block.—Two recovery rooms, laboratory (present laboratory to be made into dentist's room), waiting room, store, surgeons' dressing and douche room, dispensary, lavatory, out-patients' and visitors' w.c.

Extension to administrative block.—Provision of assistant medical superintendent's sitting and dining room, and bedroom at the west end of the block.

New nurses' home, containing matron's quarters, bedrooms for 28 nurses, recreation and reading rooms, sewing room, laundrette, kitchen, stores, linen room, box room, cloak room, drying room, shoe room and sanitary arrangements.

Extension to kitchen block.—New sitting room for maids, drying room and shoe room.

Consulting rooms.—New room to be provided at the rear of the duty room on both the male and female pavilions.

Concert hall and chapel, to be built to the south of the female pavilion.

The weekly maintenance charge for 1937-38 was £2 19s. 6d. per patient. This includes 7s. 9d. for structural renewals and repairs, and 4s. 8d. for loan charges.

The average length of stay of patients at High Carley during 1937 was as under :—

Patients discharged	229 days.
Patients who died in the sanatorium	236 days.
Observation cases	63 days.
Observation cases which died in the sanatorium	105 days.

Dr. Leggat reports as follows on treatment and administration :—

The number of patients admitted during 1937 was 177 ; 163 were discharged and 13 died. In addition, 23 cases were sent in for observation and diagnosis, 22 were discharged, and 2 died. Table 31 on page 111 shows the condition of the patients discharged.

I feel it unnecessary to reiterate year after year the outline of the routine treatment that has been carried out as in former years, but I should like to emphasize that rest and surgical intervention are still our main line of attack.

There has been a big increase in the amount of surgical work done, and this has necessitated Mr. Morrison Davies and others of the consultant surgical staff visiting the sanatorium every fortnight. A large amount of extra work has had to be undertaken at the sanatorium, and it has been found necessary to increase the medical staff by the appointment of a junior medical officer, and the nursing staff by three staff nurses.

Our great difficulty, like other institutions, has been to obtain a full nursing staff. Owing to the difficulty of keeping nurses, our present staff have had to put in extra hours of duty, but we hope that when the new extensions for accommodating the nurses are completed, the conditions may prove more attractive and will encourage the nurses to stay.

For the past year we have been in the hands of contractors who are carrying out the following work :—

A modern nursing home to accommodate 28 nurses, which is being built on a site about 200 yards from the main administrative block ; and alterations and extensions to the present treatment block, namely, new recovery rooms, x-ray room, light treatment room, dressing room for the surgical staff, two consulting rooms for the male and female blocks, a sitting-recreation room and a changing room for the maids, and a large combined concert hall, female recreation room and chapel.

Artificial pneumothorax.—I have very little more to say than in my last report, but I should like to emphasize again that if an artificial pneumothorax is not doing what was expected of it then either it ought to be given up or some other form of surgical intervention substituted. I feel it is an absolute waste of time carrying on with an unsatisfactory pneumothorax and running quite unnecessary risks for the patient.

The number of patients continuing from the previous year was 32, and during 1937, 62 patients commenced this form of treatment. There were 47 successful inductions and 15 unsuccessful ; in addition, 16 patients admitted during the year were already undergoing artificial pneumothorax treatment.

Fluid, varying from a puddle upwards, developed in 56 per cent. of the successful inductions.

Of 95 patients in whom a successful induction had been obtained, 45 were discharged during the year, 42 were still in the sanatorium on the 31st December, 1937, 2 died and 6 ceased treatment for the following reasons :—Unsatisfactory collapse 3, fluid 1, refused further treatment 1, left for other than medical reasons 1.

Of 45 patients who completed the treatment, 35 had positive sputum on commencement which in 21 cases became negative after repeated Ziehl Neelsen tests, equal to a bacillary loss of 60 per cent.

The number of refills was 1,845.

Thoracoscopy with division of adhesions.—We have found, with improved technique, that complications are few and have caused little anxiety, so that practically all cases now, where adhesions are obvious, have thoracoscopy done; and if it is possible for the adhesions to be dealt with, this is carried out without delay. Not only do adhesions prevent proper control of a diseased area by the artificial pneumothorax, but they keep cavities patent. Moreover, they are most frequently found over the site of the disease, and if they are left and not dealt with, the continual tugging may be sufficient to reactivate an apparently quiescent lesion. Therefore I have no hesitation in saying that all cases showing the presence of adhesions should have thoracoscopy done and the adhesions dealt with. It is interesting to note that in the four cases referred to in the footnotes to Table 29, where the sputum remained persistently positive, it was found impossible either to divide or to enucleate the adhesions. The most frequent complication found was the formation of fluid, but it caused very little trouble and usually re-absorbed without removal. Occasionally one came across haemorrhage following a division of adhesions, but not of a serious nature, and it was found that this could be cleared up by washing out with normal saline. The only point I should like to emphasize here is that it is important to wash out any blood the following day, so as to prevent the danger of clotting and the lung coming out.

The following Table 29 shows the results in 25 cases which have had thoracoscopy with division of adhesions in 1937 :—

Patient.	Number of operations.	Number of adhesions divided on each occasion.	Complications.	Result of treatment.	Sputum.	
					Before operation.	After operation.
M.K., female, aged 15 years	1	2	Puddle of fluid, cleared up	Collapse markedly improved	Nil	Nil
E.B., female, aged 21 years	1	4	Puddle of fluid, cleared up	Collapse markedly improved	Nil	Nil
J.J., male, aged 39 years	2	1 and 2	Nil	(1) Collapse improved (2) Collapse further improved with control of cavitation	Positive	Negative
K.J., female, aged 17 years	1	1	Puddle of fluid, cleared up	Good collapse with control of cavity	Negative	Negative
D.C., female, aged 36 years	1	4	Fluid, spontaneous pneumothorax	Unsatisfactory	Positive	Positive
A.J., female, aged 26 years	1	5	Puddle of fluid, cleared up	Satisfactory	Negative	Negative
J.H., female, aged 24 years	1	3	Puddle of fluid, cleared up	Collapse improved	Negative	Negative
F.O., male, aged 24 years	1	1	Fluid, aspirated 450 c.c.	Definite improvement in collapse	Positive	Negative

Table 29—continued.

Patient.	Number of operations.	Number of adhesions divided on each occasion.	Complications.	Result of treatment.	Sputum.	
					Before operation.	After operation.
B.R., female, aged 26 years	1	4	Puddle of fluid, cleared up	Collapse improved	Positive	Nil
F.C., female, aged 25 years	1	1	Puddle of fluid, cleared up	Marked improvement in collapse	Negative	Negative
O.B., female, aged 29 years	2	3 and 2	Puddle of fluid, cleared up	(1) Collapse improved (2) Collapse further improved	Nil	Nil
L.T., female, aged 21 years	1	3	Fluid	Collapse improved but cavitation not controlled	Positive	Positive
T.T., female, aged 19 years	1	1	Fluid	Collapse improved but cavities not completely controlled	Positive	Negative
M.B., female, aged 33 years	2	2 and 1	Puddle of fluid, cleared up	(1) Collapse improved (2) Collapse further improved	Positive	Negative
J.T., male, aged 24 years	1	2	Haemorrhage, fluid	Collapse improved	Positive	Negative
A.D., female, aged 40 years	1	1	Fluid, spontaneous pneumothorax	*	Positive	Positive
M.M., female, aged 22 years	1	5	Puddle of fluid, cleared up	Collapse improved	Positive	Negative
D.M., female, aged 26 years	1	Numerous	Puddle of fluid, cleared up	Collapse improved	Negative	Negative
R.W., male, aged 21 years	1	2	Puddle of fluid, cleared up	Very satisfactory collapse	Positive	Negative
J.F.C., male, aged 16 years	1	2	Nil	†	Positive	Positive
A.L., female, aged 22 years	1	1	Nil	‡Collapse improved	Positive	Positive
M.R., female, aged 23 years	2	Numerous	Puddle of fluid, cleared up	§(1) Collapse improved §(2) Collapse slightly improved	Positive	Positive
J.H., male, aged 21 years	1	Numerous	Nil	Collapse slightly improved	Positive	Negative
J.P.R., male, aged 29 years	1	3	Nil	Collapse improved	Nil	Nil
J.S., male, aged 21 years	1	4	Puddle of fluid, cleared up	Collapse improved	Negative	Negative

* Had very large apical cavity which was not controlled by division of adhesion; developed spontaneous pneumothorax and tubercular empyema. Died.

† Had marked and extensive multiple cavitation; lung found to be fused to chest wall. Cavities not controlled. Acute extension of disease. Patient died.

‡ Large apical cavity uncontrolled due to indivisible adhesions.

§ Cavities not completely controlled due to indivisible adhesions.

Illustrations of thoracoscopy of adhesions are inserted between pages 104 and 105.

Phrenic nerve interruption.—I feel that this operation is limited in scope, but where cases are carefully selected it is undoubtedly a useful adjunct.

The operation of phrenicectomy was performed on 35 patients, some with positive and some with negative or no sputum, and phrenic crush in 10 cases.

The bacillary loss is not quite so striking as in the other methods of surgical intervention, but it is quite encouraging. In the case of phrenicectomy the bacillary loss is 50 per cent., and in the case of phrenic crush 44·4 per cent.

Thoracoplasty.—The following Table 30 shows, for patients discharged from High Carley up to the end of 1937, the results of the operation of complete thoracoplasty (*i.e.*, portions of at least 10 ribs removed) :—

Patient.	Date of last operation.	Sputum.			Present working capacity.	
		Before operation.	On discharge. *	On last examination.	Fit for work.	At work.
L.W., female, aged 27 years	14-10-33	Positive, 1—4 dr.	Nil 1 dr. occ.	Negative 9-2-38	Yes	Yes
M.M., female, aged 25 years	12-2-35	Positive, specimen only	Nil	Nil 5-4-38	No	No
M.I., female, aged 21 years	5-5-35	Nil	Nil	Nil 8-11-37	Yes	Yes
M.S., female, aged 20 years	25-1-36	Positive, 1 oz.	Negative, 2 dr.	Negative 15-10-37	Yes	Yes
N.L., male, aged 19 years	15-2-36	Positive, 1—2 dr.	Negative, 0—2 dr.	Nil 26-4-38	Yes	No
V.B., female, aged 24 years	6-6-36	Positive, 1—3 oz.	Negative, 1—4 dr.	Nil 25-4-38	No	No
A.B., female, aged 24 years	28-5-36	Positive, 5—16 dr.	Nil	Nil 16-9-37	No	No
M.G., female, aged 16 years	28-5-36	Positive, 1 dr.	Nil	Nil 5-2-38	Yes	Yes
I.B., female, aged 36 years	11-8-36	Positive, 1—11 dr.	Nil	Nil 25-4-38	No	No
E.S., female, aged 26 years	2-9-36	Positive, 1 oz.	Nil	Nil 25-4-38	Yes light	No
W.B., male, aged 19 years	8-12-36	Positive, 2—12 dr.	Nil	Nil 1-11-37	No	No
A.T., female, aged 36 years	20-2-37	Positive, 2—20 dr.	Nil	Nil 28-4-38	No	No

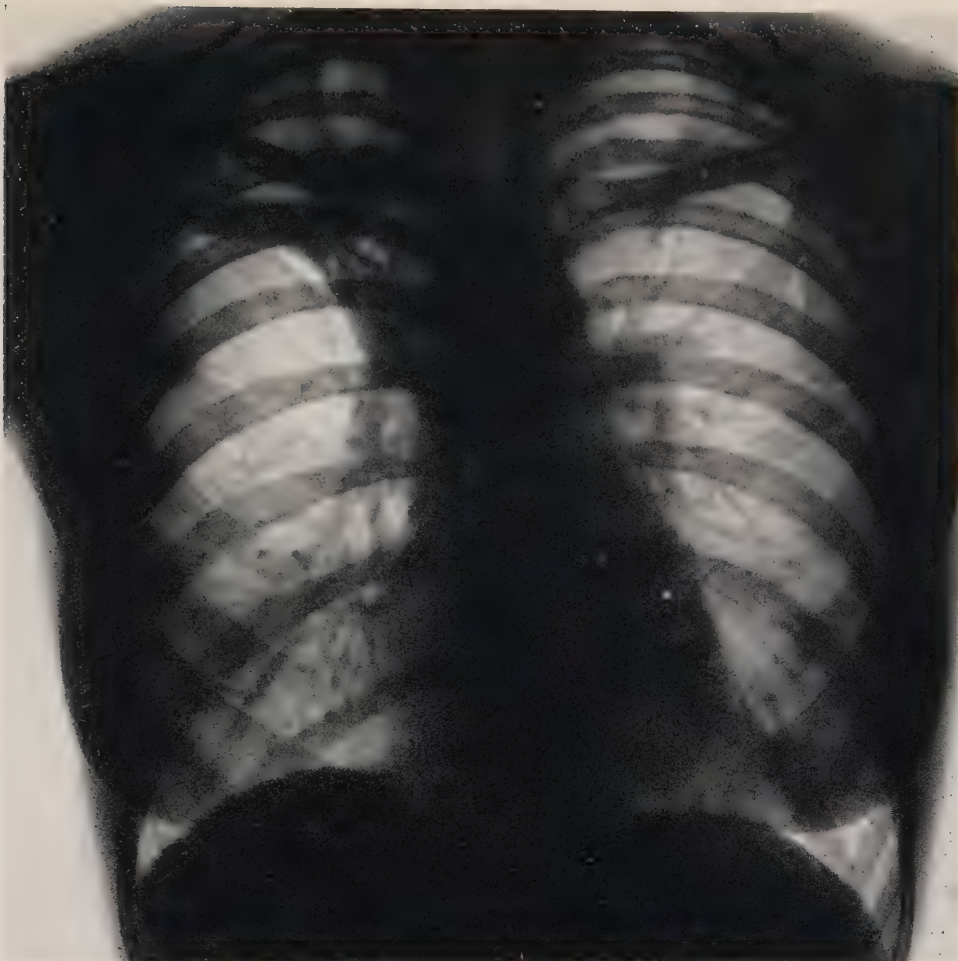
* By Ziehl Neelsen method.

The results in this table are so striking that comments are almost superfluous, but I should like to draw attention to one or two points.

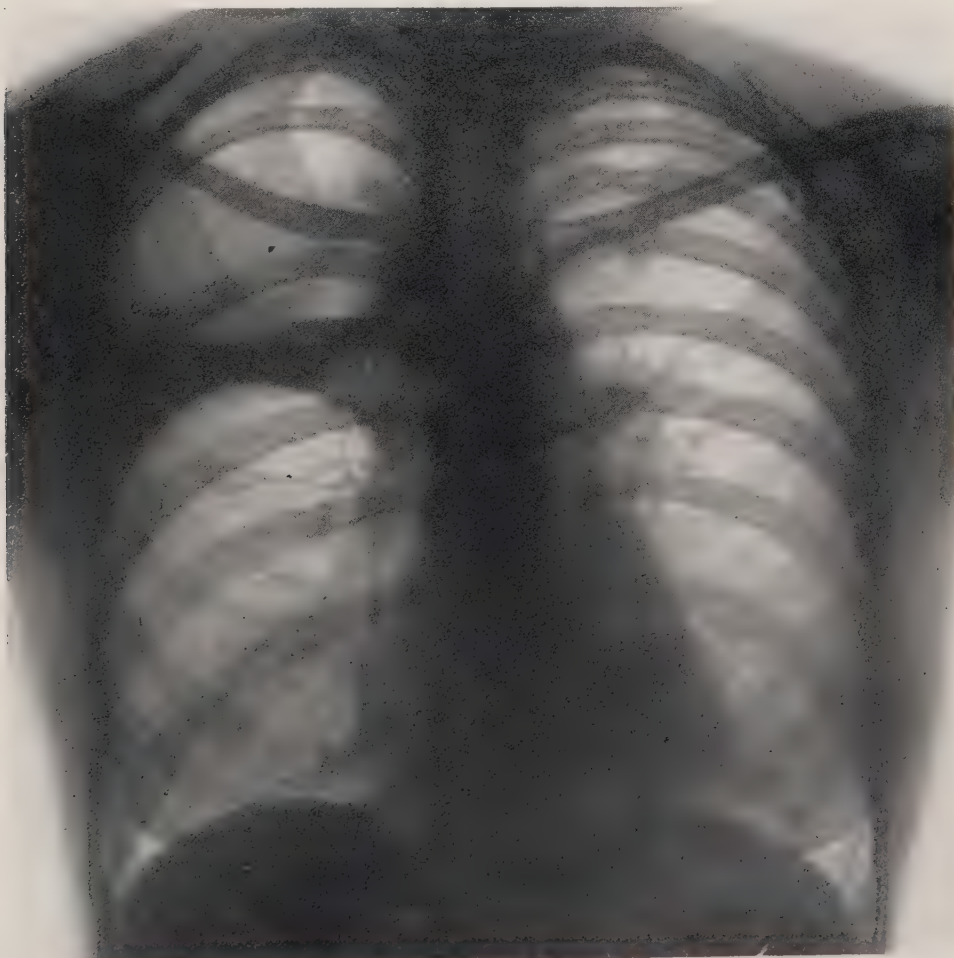
All these patients except one had positive sputum before operation, now it is negative or absent. In other words patients previously highly infectious have been rendered free from infection.

In all cases efforts had been made without success to arrest the disease before they were submitted to the operation. Since the operation

EXTRA PLEURAL PNEUMOTHORAX.



H.C.1(a).—C.B., female, aged 27 years. Had an artificial pneumothorax induced on right side before admission ; cavity found to be completely adherent to chest wall, and as artificial pneumothorax was not producing any control of cavity it was abandoned. Admitted to High Carley for further surgical intervention. Skiagram taken 10-8-37 on admission shows very large cavity occupying greater part of upper zone on right side with a fluid level ; there are a few calcified deposits at right base. Left lung appears clear. Sputum $\frac{1}{2}$ -1 $\frac{1}{2}$ ozs., positive.

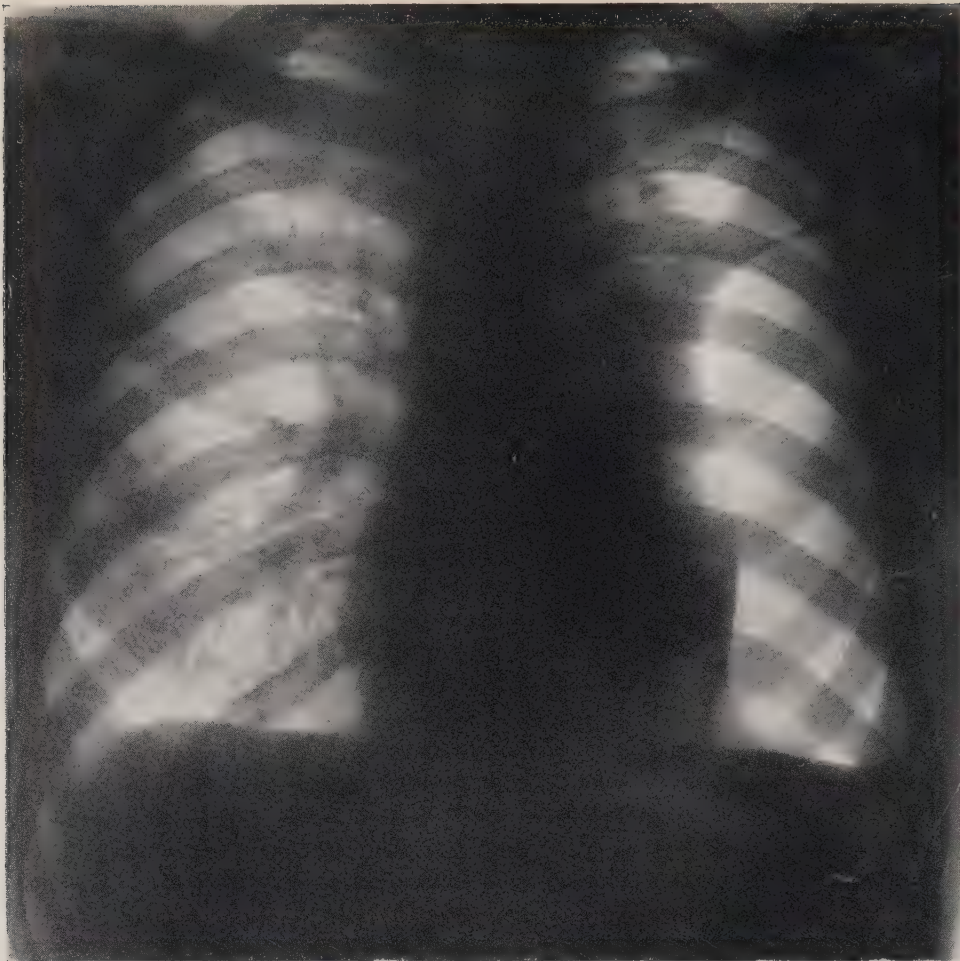


H.C.1(b).—Same patient. Extra pleural pneumothorax done by Mr. Morrision Davies on 28-1-38, with removal of part of 5th rib posteriorly. Skiagram taken 15-2-38 shows appearance after operation ; a large extra pleural space with a small fluid level gives complete control of apical cavity. Sputum absent from immediately following operation to present date. Patient on full work ; general condition good.

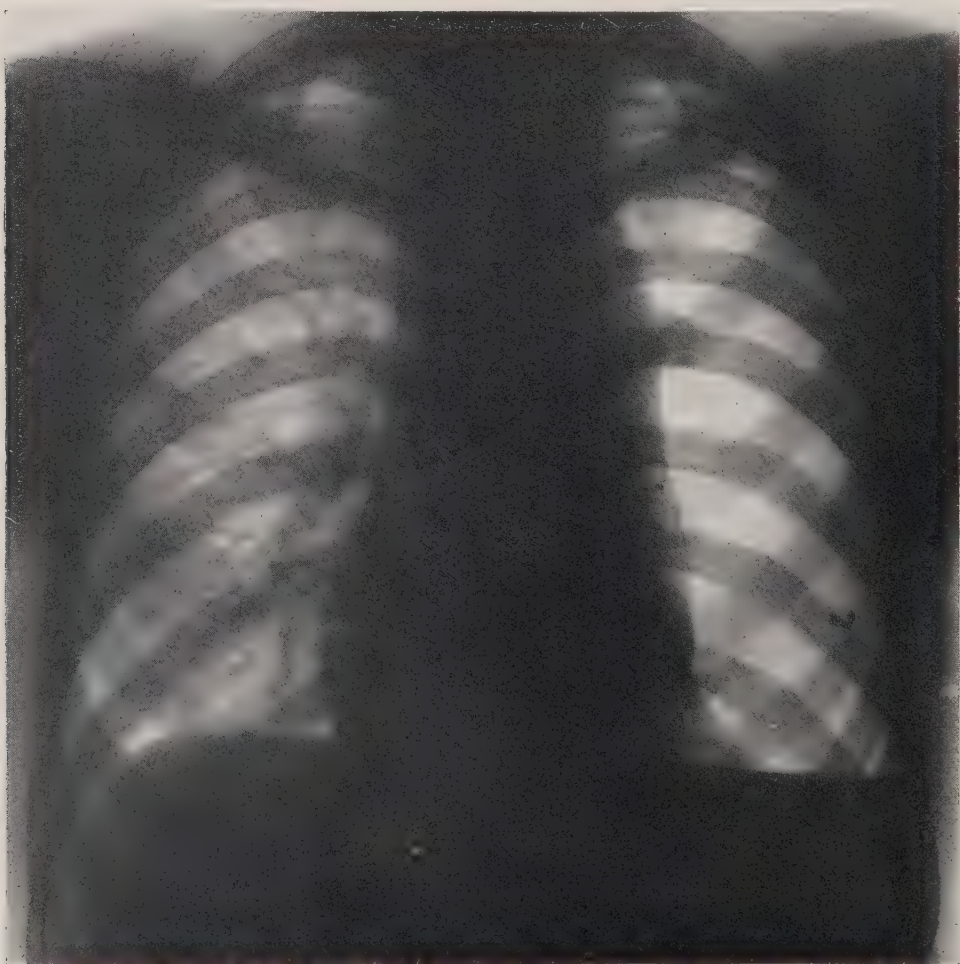
(Skiagrams taken at High Carley Sanatorium).

RIGHT.

LEFT.



H.C.2(a).—R.W., male, aged 21 years. Skiagram taken 26-7-37 shows on left side a moderately good collapse with two adhesions running laterally from upper zone to periphery; puddle of fluid at costo-phrenic angle. On right side a certain amount of suspicious mottling is seen in lower zone. Sputum $1\frac{1}{2}$ -2 ozs., positive on three occasions.

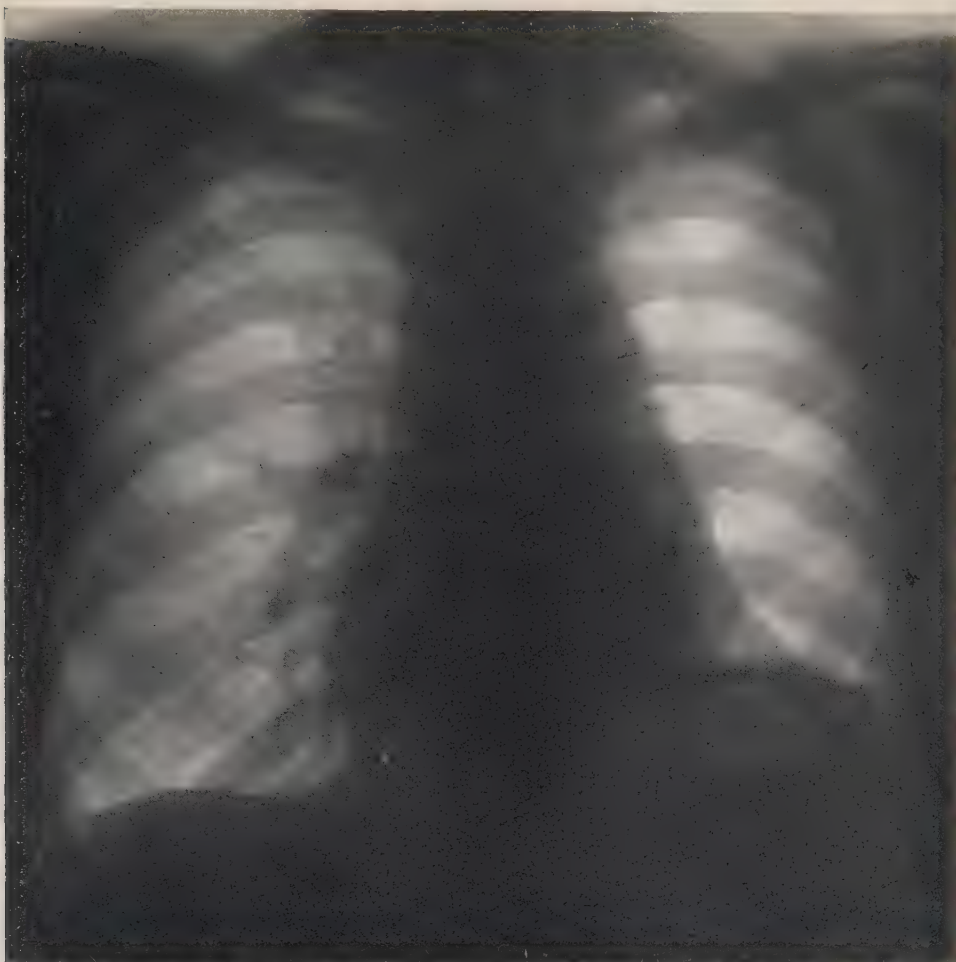


H.C.2(b).—Same patient. Left thoracoscopy performed 27-7-37. A broad apical adhesion, division not feasible. Lower down two adhesions—one strap-like, below and in front, with lung tissue in it, was enucleated, and one cord-like, above and behind, was divided. Skiagram taken 30-7-37 shows complete enucleation of both lateral adhesions with almost complete collapse of lung. Increase of puddle of fluid at costo-phrenic angle, and slight displacement of heart, mediastinum, and trachea to right.

(Skiagrams taken at High Carley Sanatorium).—

RIGHT.

LEFT.



H.C.2(c).—Same patient. Left phrenicectomy performed 15-11-37 to take off tension of apical adhesion. Skiagram taken 9-12-37 shows definite rise of dome of diaphragm on left side as result of phrenicectomy, with improvement in the collapse. Fluid almost entirely cleared up. Right side still shows a certain amount of suspicious mottling at base, but harder than in previous skiagram.

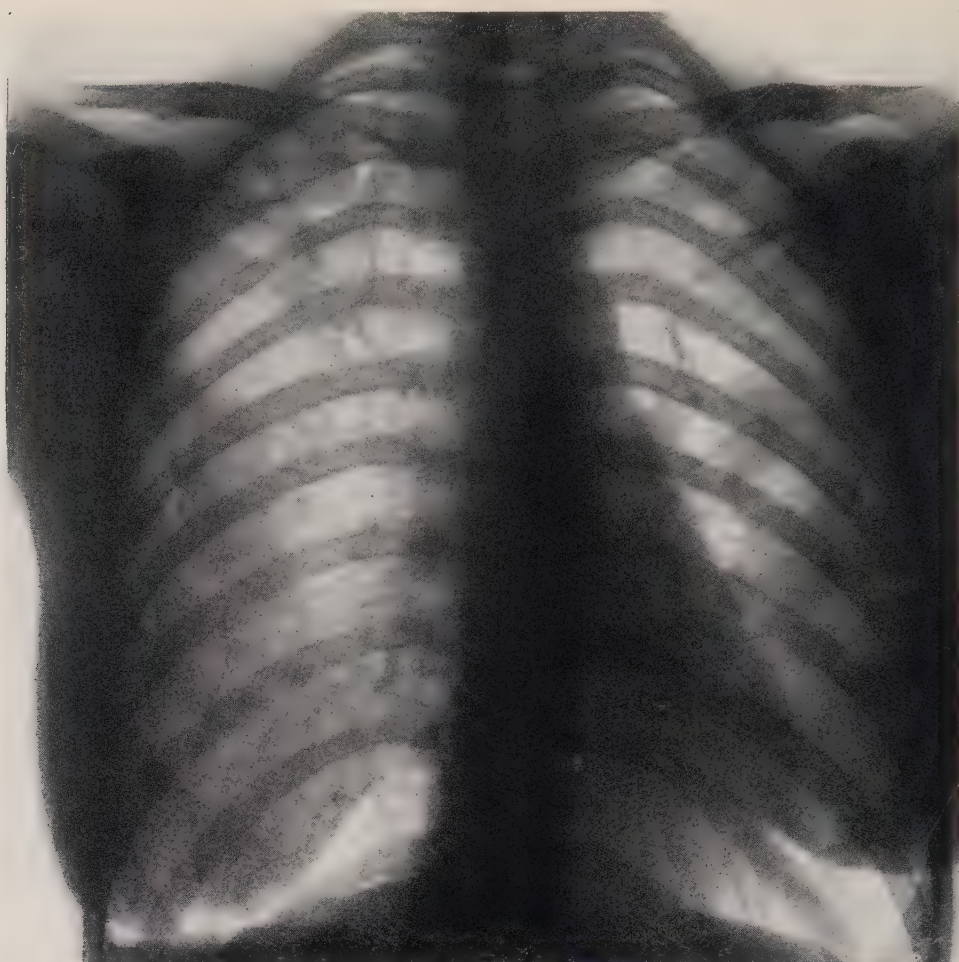


H.C.2(d).—Same patient. Skiagram taken 13-6-38 shows left lung still well collapsed. There is still a good rise of dome of diaphragm. On right side lung markings are all more sharply defined and suspicion of mottling at base has cleared up. Heart and mediastinum now central. Amount of sputum after thoracoscopy $\frac{1}{2}$ oz. to a trace, negative on 14 occasions.

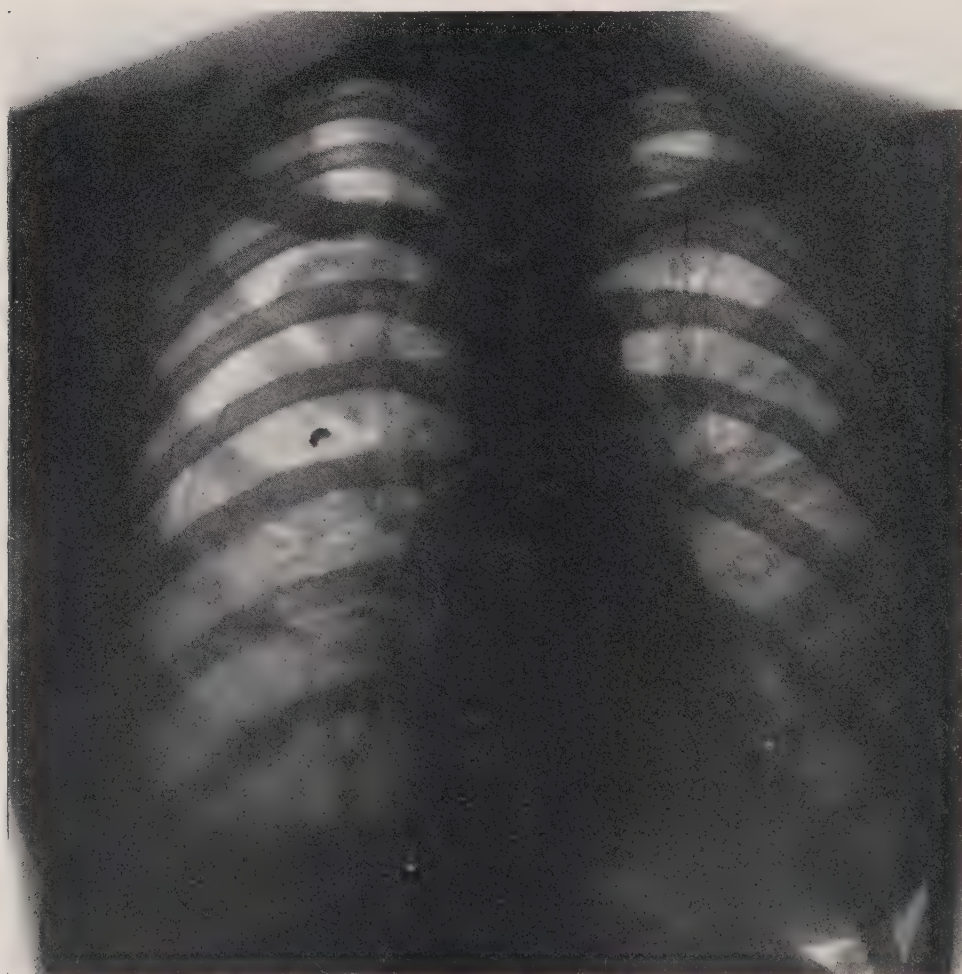
(Skiagrams taken at High Carley Sanatorium).

RIGHT.

LEFT.



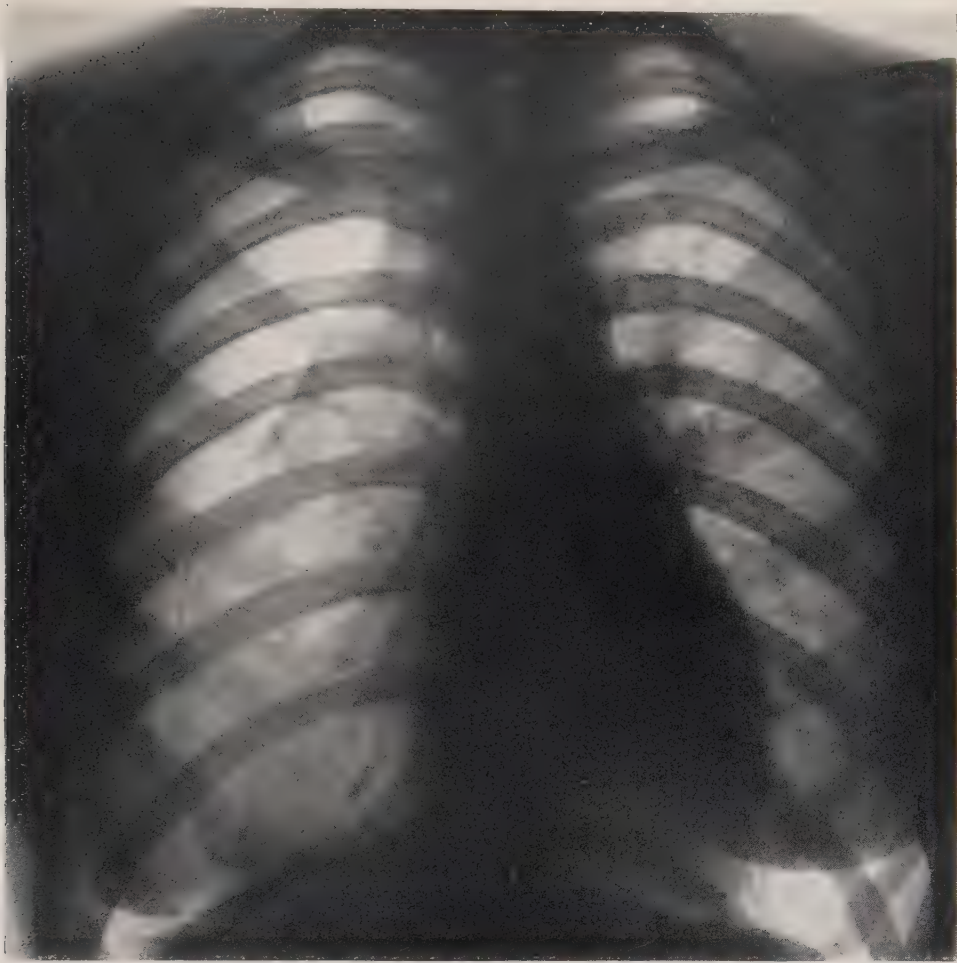
H.C.3(a).—M.K., female, aged 15 years. Skiagram taken 30-12-36 shows on right side a very irregular type of collapse with indefinite lateral adhesions. There is a small cavity, about size of 2s. piece, at apex with small adhesion holding cavity open passing to periphery. Puddle of fluid at costo-phrenic angle. Left side clear. Sputum nil.



H.C.3(b).—Same patient. Right thoracoscopy performed 11-1-37. One large quadrilateral adhesion, 5.57cm. by 3 cm., running to lateral aspect of chest wall was enucleated. One small adhesion running to subclavian artery divided close to artery. Occasional drip of blood coagulated by diathermy. One very small adhesion running upwards and outwards remains which will probably stretch and not need division. Skiagram taken 11-1-37 shows very definite improvement in collapse with complete separation of lateral adhesions. Apical cavity more apparent. Still a puddle of fluid at costo-phrenic angle. (*Skiagrams taken at High Carley Sanatorium*).

RIGHT.

LEFT.



H.C.3(c).—Same patient. Skiagram taken 28-9-37 shows marked improvement in collapse, especially of upper and diseased zone, which has been obtained by complete division and enucleation of adhesions. Division of adhesions was carried out mainly to improve collapse and gain control of apical cavity which is now completely controlled. Patient has remained free from sputum.

(Skiagrams taken at High Carley Sanatorium).

RIGHT

LEFT.

they have all been able to return to their homes without fear of disseminating infection to others.

It is most important to emphasize that the persistence of physical signs (such as rales) in a lung collapsed by thoracoplasty does not necessarily indicate the persistence of an active lesion. It has been repeatedly pointed out that, as stated by Alexander* :—

“ The collapsed lung, even after its disease has become wholly arrested, usually presents the physical signs of active tuberculosis.

“ During the entire lifetime of the patient rales are likely to be heard in a collapsed lung, especially in the infiltrated and fibrotic parts in which the tuberculosis has become healed, and even in patients who have no sputum whatever. The rales are believed to be caused by the small amounts of mucus, which are always present on the mucous membrane of the large bronchi and of the kinked and more or less collapsed small bronchi, being set in motion by the feeble air currents and respiratory movements that persist after thoracoplasty ; well-collapsed alveoli are probably not the source of the rales.

“ Judgment of the clinical condition of the collapsed lung must be made indirectly. It is based chiefly upon such factors as general symptoms, weight, fatigue after exercise or work, pulse, temperature, presence or absence of tubercle bacilli, the sedimentation time, definitely new areas of infiltration, and an open cavity in roentgenograms. Determination of possibly persisting tuberculous activity in the collapsed lung is especially difficult to arrive at if the contralateral lung and other organs cannot be excluded as sources of tuberculous activity.”

Extra pleural pneumothorax.—Four patients so far have had this operation, but no certain assessment of its value can yet be made. Here inserted is an x-ray photograph showing complete control of a large apical cavity as a result of this operation.

Bacillary loss after surgical treatment.—The bacillary loss after various methods of surgical treatment, tested by repeated Ziehl Neelsen, is as follows :—

- (1) *Artificial pneumothorax.*—Cases induced in 1936-1937 (in whom a satisfactory collapse was obtained) and either discharged in 1937 or in the sanatorium at the end of 1937 :
35 cases with positive sputum before treatment.
21 have become negative or nil. Bacillary loss 60 per cent.
- (2) *Phrenicectomy.*—Patients operated on in 1937 only :
14 cases had positive sputum before treatment.
7 have become negative or nil. Bacillary loss 50 per cent.
- (3) *Phrenic crush.*—Patients operated on in 1937 only :
9 cases had positive sputum before treatment.
4 have become negative or nil. Bacillary loss 44.4 per cent.
- (4) *Thoracoscopy with division of adhesions.*—Patients operated on in 1937 only :
15 cases had positive sputum before treatment.
9 have become negative or nil. Bacillary loss 60 per cent.
- (5) *Thoracoplasty* (see Table 30).—Patients who had had complete operation and had been discharged up to the end of 1937 :
11 cases had positive sputum before treatment.
11 have become negative or nil. Bacillary loss 100 per cent.

* The Collapse Therapy of Pulmonary Tuberculosis, by John Alexander, M.D., F.A.C.S., pp. 541-542.

The foregoing percentages are an indication of the benefits that have been obtained by surgical intervention. The most striking result has been after thoracoplasty. In this group 100 per cent. have been freed from their highly infectious sputum, and have thus been prevented from continuing to be a source of infection to others.

Crisalbine treatment.—Eighteen cases received this form of treatment during the year 1937, 3 continuing from the previous year, and 15 commencing during 1937.

Treatment was abandoned in 4 cases for the following reasons :—Pyrexia 1, diarrhoea 1, headache 2.

Of the remaining 14 cases, 10 completed a course of 3 or more grams, 1 (child) completed a course of 2·645 grams, and 3 were continuing treatment at the end of the year.

At the commencement of the treatment 9 of the above 11 cases had a positive sputum, but on completion of treatment 5 had lost their tubercle bacilli, representing a bacillary loss of 55·5 per cent.

The x-ray appearances showed improvement in 90·9 per cent. of the cases, and the sedimentation rate in 63·7 per cent. ; reduction in amount of sputum was found in 50 per cent. ; and gain in weight in 81·8 per cent.

The number of injections given during the year was 176.

General bacillary loss.—During the year, 88 patients who had positive sputum on admission were discharged ; the sputum on discharge in 44 cases had become negative (Ziehl Neelsen method), giving a bacillary loss of 50 per cent. A careful record of the bacillary loss has been kept for a number of years and the average loss for the last thirteen years is 34 per cent.

Sputum examinations.—The sputum of patients is examined as follows :—Observation cases weekly, T.B. minus cases fortnightly, and T.B. plus cases monthly. During the year, 1,562 specimens of sputum were examined of which 667 were positive for tubercle bacilli.

Cultural examinations. During the year, 9 specimens of pleural fluid were set up for culture by the Lowenstein-Jensen method, 8 of which were found to be negative, and one positive for tubercle bacilli. In addition one specimen of pus from an abscess was set up and was found to be positive for tubercle bacilli.

The appointment of a junior assistant during 1938 has allowed more time for the senior assistant to carry out bacteriological work. All observation cases, or others with sputum negative on two occasions by Ziehl Neelsen, now have the Lowenstein-Jensen method of culture applied.

Patients' weights. Patients' weights are taken at weekly intervals ; the average gain in weight of both the male and female patients who completed two or more months' treatment was 12·3 lbs.

Dental treatment. We are much indebted to Mr. Arthur Miller for carrying out the dental treatment at the institution. His services have been invaluable in cleaning up the mouths of patients selected for major surgical treatment.

During the year, 116 County patients received some form of dental treatment, particulars of which will be found in Chapter XXVI.

Nurses' examinations. Probationer nurses are prepared for the examination held under the auspices of the Tuberculosis Association. During the year three nurses sat for Part I, and two passed, and two nurses who sat for Part II were both successful.

Occupational therapy. The forms of occupational therapy carried out during the year were : Joinery, carpentry, wattle hurdle making, cane chair mending, gardening and poultry keeping.

Social activities. The usual outdoor games were provided during the summer months—bowls and clock golf for the men, and croquet and clock golf for the women. Whist drives were held at frequent intervals, and the cinematograph entertainments were continued during the winter months.

We have to thank several kind friends for bringing concert parties to entertain the patients and staff ; the concerts were very much appreciated.

Coronation Day festivities. All graduated work and exercise was suspended and patients were allowed out of the grounds for extra walks. In the morning Councillor Warhurst presented to the children the medals and cups provided by the local Education Committee. The greater

part of the day was spent in games, *i.e.*, whist drives, clock golf, croquet, putting, and guessing competitions for the bed patients. A special Coronation dinner was provided at night, the dining room being suitably decorated for the occasion.

Library. The library which is kept up to date by grants from the County Tuberculosis Committee continues to be greatly appreciated by the patients and staff.

Church Services. Church of England. Owing to illness Canon Kenworthy, who had been chaplain to the sanatorium from the day it opened 22 years ago, resigned in July, 1937. During this long period Canon Kenworthy has taken great personal interest in the institution and in the religious welfare of the patients and staff. He never failed to hold religious services and made personal sacrifices so that these could be carried out. He made a point of knowing every individual patient and trying to help them in their difficulties. We all regret his resignation and wish him renewed health in his retirement.

Canon Burnett, who has been appointed Vicar of Pennington, has very kindly taken over the duties of visiting chaplain; he holds a service every Thursday, on which day he also visits each patient, and on the first Thursday in each month holds a celebration of the Holy Communion.

Roman Catholic. Father Morrissey, from Ulverston, hears Confessions on one evening in every seventh week, and the following morning administers Holy Communion.

Nonconformist. We are in negotiations, but so far have not been able to get anyone to take regular Nonconformist services.

I should like to thank the reverend gentlemen who have so kindly ministered to the spiritual welfare of the patients.

Visit by the Committee. We were honoured in May by a visit from the County Tuberculosis Committee, who expressed their satisfaction at the work being carried on at High Carley.

A post-graduate course was given to the County tuberculosis health visitors on two consecutive days in June, which I think definitely stimulated their interest and gave them an opportunity of seeing various methods of modern surgical treatment.

To our guide, philosopher and friend, Mr. Morrision Davies, we tender our sincere thanks for his ever-ready help and valuable advice.

I should again like to thank Mr. Edwards, for the help he has given us in the surgical work, and the anaesthetist, Dr. John Halton.

Dr. Hughes was promoted to the dispensary staff on 1/12/37, and I should like to thank him for the great help he gave me at High Carley. He was succeeded by Dr. C. V. Stevenson, to whom also my thanks are due for the help he has given me since his appointment. The second assistant's post was filled on 15/2/38 by Dr. G. A. Wilthew.

The general increase in the surgical work has undoubtedly thrown a great deal of extra work on the matron and her staff, which has been complicated in the last twelve months by the difficulty experienced in getting suitable nurses. I should like to thank Miss Woosey for the excellent manner in which she has coped with the situation, the nursing staff generally for the loyal support they have given, and finally Mr. Nichols, the clerk to the institution.

Details of work carried out at High Carley during the year :—

Artificial pneumothorax—

Inductions.....	62
Refills	1,845
Gas replacements	19
Gas withdrawals	11
Fluid withdrawals	1
Pressure tests	18
Thoracoscopy	6
Thoracoscopy with division of adhesions	28
Phrenic nerve operations—	
Phrenicectomy 35, phrenic crush 10	45
Thoracoplasty operations	24
Gold salts—	
Crisalbine injections	176
Bronchoscopy	2
Resection of rib	1
Application of permanent airway with oxygen	1
Aspiration of chest	13
Aspiration of cyst and chest	5
Throat examinations	28
Blood sedimentation tests (Cutler's method)	1,058

Mantoux tests	7
Lipiodol injections	15
Excisions.....	1
Incisions and packing	10
Surgical dressings	133
Dressing and irrigation	6
Permanent drainage	2
Removal of foreign body	1
Irrigation of drainage tube	1
Removal of drainage tube	1
Circumcision	1
X-ray work—	
Screen examinations	2,348
Skiagrams	1,316
Sputum examinations—	
Positive	667
Negative	895
Cultures—Lowenstein-Jensen method—	
Pleural fluid 9, pus 1	10

Number of patients afforded special treatment for the first time during 1937 :—

Artificial pneumothorax—	
Attempted	62
Satisfactory	47
Unsatisfactory	15
Phrenicectomy	44
Thoracoplasty	10
Thoracoscopy	6
Thoracoscopy with division of adhesions	25

Number of patients in High Carley on the 31st December, 1937, who were receiving special treatment :—

Artificial pneumothorax	35
Artificial pneumothorax and phrenicectomy or phrenic crush	2
Artificial pneumothorax and crisalbine	1
Artificial pneumothorax and thoracoscopy with division of adhesions	4
Phrenicectomy	3
Thoracoplasty	9
Gold salts (crisalbine)	2

The following Table 31 shows the condition of patients discharged from the High Carley Sanatorium during the year 1937 :—

Classification on admission to the sanatorium.	Condition at time of discharge.	Duration of residential treatment in the sanatorium.					Total.	
		Under 28 days.	1—3 months.	3—6 months.	6—12 months.	More than 12 months.	No.	%
T.B. minus	Quiescent	—	9	17	3	1	30	78·9
	Improved	1	1	1	2	—	5	13·2
	No material improvement	—	1	2	—	—	3	7·9
	Died in sanatorium	—	—	—	—	—	—	—
T.B. plus 1	Quiescent	—	1	6	13	5	25	60·9
	Improved	—	5	3	3	4	15	36·6
	No material improvement	—	1	—	—	—	1	2·4
	Died in sanatorium	—	—	—	—	—	—	—
T.B. plus 2	Quiescent	—	1	6	10	8	25	27·8
	Improved	1	5	18	9	9	42	46·7
	No material improvement	3	1	3	1	3	11	12·2
	Died in sanatorium	—	3	1	5	3	12	13·3
T.B. plus 3	Quiescent	—	—	1	1	—	2	28·6
	Improved	—	—	1	1	1	3	42·8
	No material improvement	—	—	—	1	—	1	14·3
	Died in sanatorium	—	—	1	—	—	1	14·3
Total		5	28	60	49	34	176	—
Diagnosis on discharge from observation.					Stay under 4 weeks.	Stay over 4 weeks.		
Tuberculous					—	3	3	12·5
Non-tuberculous					1	17	18	75·0
Doubtful					—	1	1	4·2
Died					—	*2	2	8·3
Grand Total							200	

* Cause of death : (1) Uraemia, chronic interstitial nephritis, and arteriosclerosis.
(2) Cardiac failure, myocarditis, and pulmonary abscess.

OUBAS HOUSE CHILDREN'S SANATORIUM, ULVERSTON.

The medical superintendent, assistant medical superintendent, and matron of the High Carley Sanatorium are also responsible for the work at Oubas House. The sister-in-charge is Miss D. Pope, and the certificated school teacher is Miss A. Gibson.

The house, the property of the County Council, stands in its own grounds (about one acre in extent), and accommodates 21 girls. Educational instruction is given to the children in conformity with the requirements of the Board of Education.

During the year, 14 patients received from the visiting dental surgeon, Mr. A. Miller, some form of dental treatment particulars of which are given in Chapter XXVI.

The weekly maintenance charge for 1937-38 was £1 17s. 7d. per patient.

The average length of stay of patients at Oubas House during 1937 was as under :—

Patients discharged	.....	.....	.....	.....	195 days.
Observation cases	.....	.....	.....	.....	208 days.

Dr. Leggat reports as follows :—

During the year, 20 patients were admitted and 19 were discharged ; their condition on discharge was :—Disease quiescent 12, improved 1, transferred to High Carley Sanatorium 5, transferred to Wrightington Hospital 1. In addition, 14 cases were admitted for observation and 11 were discharged (4 of which were diagnosed as tuberculous).

The Mantoux test was carried out in 11 cases with the following results :—

Number of positive reactions after 0.1 c.c. of 1/10,000	6
Number of positive reactions after 0.1 c.c. of 1/1,000	3
Number of negative reactions	2

During the year, 40 specimens of sputum were examined, of which 2 were positive and 38 negative.

As in previous years, cases with positive sputum or those requiring specialised treatment were transferred to High Carley Sanatorium ; during the year, five such cases were transferred.

The average gain in weight of patients discharged during 1937 was 9 lbs.

On Coronation Day, Councillor and Mrs. Warhurst visited the sanatorium and presented medals and cups to the children. In the afternoon the children had a delightful outing to Hawkshead which ended with a tea-party on their return to Oubas House.

Through the generosity of the County Tuberculosis Committee, the children had two outings during the summer months—one to Grange and the other to Walney Island—both of which were greatly enjoyed.

We are much indebted to Lady Fell for her frequent visits throughout the year and for the kindly interest she takes in the welfare of the children.

We have to thank the numerous friends who sent gifts at Christmas and baskets of strawberries during the summer months.

Several of the children were expertly trained by Sister Pope and the teacher, Miss Gibson, and gave delightful concerts to parents, friends and visitors, and on Christmas Day to the patients at High Carley.

Very good handwork, consisting of embroidered tea cloths, rug making, knitted jumpers, bedroom slippers, and tea cosies, has been done by the older girls apart from their work in school. The children were encouraged to enter newspaper competitions and several prizes have been won.

We were honoured by visits from Sir Thomas Tomlinson, and also by the annual visit of the County Tuberculosis Committee in May.

I should again like to thank Sister Pope for the great help she has given me, and the kindly interest she shows for the welfare of the patients.

The following is a report I have received from Miss Gibson, the teacher :—

The work of the school has been steadily and progressively carried on.

As in previous years, individual teaching is necessary, and instruction is given according to the physical and mental capacity of each child. Some very good handwork has been done.

Nature walks are a welcome feature, the surrounding neighbourhood being well adapted for such instruction.

The average age of the children has been slightly above that for the past three years.

I should again like to thank Miss Gibson for the great amount of trouble she takes in the education of the children.

FURNESS DISPENSARY AREA.

Area (estimated population 38,034) embraces Dalton-in-Furness, Grange-over-Sands, Ulverston, and Ulverston Rural districts.

Dr. Leggat sends the following report :—

The number of new cases and new contacts examined during the year 1937 was 142 ; of these, 36 were diagnosed as tuberculous, 102 as non-tuberculous, and at the end of the year 4 cases still remained doubtful.

During the year, 236 skiagrams were taken and 92 screen examinations made at High Carley in regard to dispensary patients.

Seven individuals from the dispensary area attended High Carley for artificial pneumothorax refills in continuance of their treatment after discharge from sanatoria.

The examination of sputum, as in previous years, was carried out at High Carley ; 75 specimens were examined, 11 of which were positive for tubercle bacilli and 64 negative.

The proportion of new cases referred to me by medical practitioners, etc., for an opinion as to diagnosis before statutory notification has gone up to the pleasing total of 100 per cent., and is a conclusive indication of the very close co-operation that has been maintained in this area. I should like once again to thank the medical practitioners for their continued support, for without the help they have given me the work could not have been carried out in the excellent manner in which it has been.

I should also like to thank Nurse Duston for her great help at the dispensary and in the area. She has been ever ready to take on extra work. Her intimate knowledge of the various families in the district has been invaluable in the dispensary work.

Summary of Dispensary Work.

Number of tuberculous cases under supervision on 31st December, 1937			
(Definitely tuberculous, 262 ; doubtful, 4)			266
	Examinations of <i>new persons</i> and <i>new contacts</i> for diagnosis.	Re-visits or re-attendances of " <i>old</i> " cases and " <i>old</i> " <i>contacts</i> .	
Examinations by tuberculosis officer at—			
Patients' homes	30	48	
Ulverston Dispensary	112	428	
Attendances of patients at the Ulverston Dispensary for artificial light treatment (21 individual patients)			692
Attendances for artificial pneumothorax treatment (7 individual patients)			84
Visits by tuberculosis officer to sanatoria, and pulmonary and special hospitals			11
Visits by dispensary nurse to patients' homes—			
Routine visits		1,539	} 1,790
Application of surgical dressings		241	
Other actual nursing		10	
Disinfections carried out by local sanitary authorities			29
Percentage of new cases referred by medical practitioners, &c., to tuberculosis officer for an opinion as to diagnosis or treatment <i>before</i> statutory notification			100%

XX.—ELSWICK SANATORIUM AND FYLDE DISPENSARY AREA.

<i>Medical Superintendent</i>	DR. G. B. CHARNOCK.
(Dr. Charnock is also consultant tuberculosis officer for the Fylde Dispensary Area— i.e., the area around the sanatorium—containing a population of 88,808).	
<i>Visiting Consulting Chest Surgeon</i>	MR. H. MORRISTON DAVIES.
<i>Junior Visiting Consulting Chest Surgeon</i>	MR. F. R. EDWARDS.
<i>Assistant Tuberculosis Officer</i>	DR. J. N. WHYTE (to 30/11/37). DR. D. O. HUGHES (from 1/12/37). (3½ days per week).
<i>Matron</i>	MISS A. JONES.

ELSWICK SANATORIUM, NEAR KIRKHAM.

This sanatorium is situated on the east side of Elswick village, and is about six miles from Kirkham station. The buildings and about 11 acres of land belong to the Fylde, Preston, and Garstang Joint Smallpox Hospital Board, and are held on lease by the County Council until 1955. The Council are under an obligation to vacate the premises in case of a severe epidemic of smallpox. Accommodation is provided for 38 males and 32 females; total 70 pulmonary cases.

A treatment block contains x-ray room, operating theatre, sterilising room, consulting room, dressing rooms, laboratory, dispensary and office. This block also serves as a dispensary for out-patients from the southern part of the dispensary area and saves their attendance at the Fleetwood Dispensary.

During the year, 69 County patients received from the visiting dental surgeon, Dr. R. D. Allison, some form of dental treatment, particulars of which will be found in Chapter XXVI.

The weekly maintenance charge for 1937-38 was £2 15s. 7d. per patient, which includes 6s. 1d. for structural renewals and repairs.

The average length of stay of patients at Elswick during 1937 was as under :—

Patients discharged	256 days.
Patients who died in the sanatorium	142 days.
Observation cases discharged	32 days.

Dr. Charnock reports as follows :—

During the course of the year, 85 patients were admitted, 70 were discharged, and 14 died. In addition, 14 cases were sent in for observation and diagnosis, and 13 were discharged. Table 32 on page 119 shows the condition of the patients discharged.

The Elswick Sanatorium serves primarily the Fylde Area but receives cases also from the whole of the Administrative County.

The routine work of the sanatorium has continued as in former years. There are, however, a larger number of patients confined to bed and the percentage of such cases has reached the figure of 80. This is due to the long bed rest found so beneficial and to the increasing number of cases which are having some form of surgical treatment. The present regime calls for very much more nursing and work in the wards.

The treatment at Elswick is carried out on recognised lines, and consists of : Abundant fresh air and sunlight ; good nourishing food ; systematic rest ; graduated exercise and work ; and therapeutic remedies.

Patients are provided with all the medicines they need for their tuberculous condition, and are treated for all other intercurrent conditions as they occur.

The special forms of treatment include gold salts, calcium therapy, inhalation therapy, infra-red therapy, diathermy and ultra-violet ray.

Surgical measures include artificial pneumothorax, phrenic crush, phrenicectomy, internal pneumolysis, thoracoscopy, and the operation for air-tight drainage of the chest. Cases requiring major operations such as extra-pleural pneumothorax or thoracoplasty are transferred to the High Carley Sanatorium where a modern thoracic surgical unit exists for this purpose.

Owing to the large number of patients confined to bed there are few who are able to engage in work therapy at any one time. Those who are fit and willing are encouraged to interest themselves in some of the activities of the sanatorium. Patients have engaged in fruit farming, pig and poultry rearing, gardening, woodwork, painting, joinery, trench-

ing, basket-chair repairing, and wood chopping. There is a good orchard and apples grown again took prizes at the Great Ecclestone Horticultural Show.

The recreation of the patients has been well catered for. A good library is provided and maintained in up-to-date order. Patients engage in billiards, darts, bagetelle, dominoes, and card games. Frequent whist drives with prizes take place. Bowls and clock golf are outdoor recreations, whilst wireless concerts help the time to pass satisfactorily. It would seem from experience that the less excitement a tuberculous patient has the more he will benefit from his treatment.

On the 16th June, the County Tuberculosis Committee held their meeting at the sanatorium. Afterwards the members inspected the wards, and the medical superintendent gave a demonstration of the diathermy treatment of lupus.

During the year, County Alderman N. Worsley and County Councillor E. Clegg visited the institution.

Efforts are constantly being made by the County Tuberculosis Committee to keep the accommodation abreast of the times, and the sanatorium is gradually being adapted to meet the needs of the day. The re-conditioning of the heating and lighting is now practically complete. The extension to the central block to include office, laboratory, and dispensary was completed in June, 1938. The new fire escape on the east side of the Home has met a long desire and the nursing staff are the happier for its presence.

The local clergy have visited the patients as in former years.

Lectures are given regularly to the nurses entering for the examination of the Tuberculosis Association. Several nurses have obtained their certificates.

Elswick is one of the consulting centres where surgeons and tuberculosis officers meet to discuss cases of difficulty. There have been a number of meetings during the year which have been greatly appreciated.

Dr. Hughes joined the staff towards the end of the year. He has entered on the work with enthusiasm, and his help will be welcome.

I should like to take this opportunity of expressing my thanks to Dr. Allison, the visiting dentist, to Miss Jones and her staff for their loyal co-operation, and to Mr. H. E. Langham for his help both in the sanatorium and on the area.

I am greatly indebted to Dr. G. Lissant Cox and his staff at the head office for their constant help and advice ; also to my colleagues in other dispensary areas who have so kindly assisted me in the treatment of my cases.

Details of work carried out at Elswick during 1937 :—

Artificial pneumothorax—		
Inductions	.....	32
Refills	.....	763
Gas replacements	.....	5
Division of adhesions	.....	1
Phrenic nerve operations	.....	9
Gold salts—		
Sanocrysin injections	.....	30
Solganal injections	.....	70
Aspirations	.....	13
Blood sedimentation tests (Cutler's method)	.....	347
Lipiodol injections	.....	2
X-ray work—		
Screen examinations	.....	804
Skiagrams	.....	324
Sputum examinations (positive 255, negative 180)	.....	435
Gasolene concentration tests	.....	5
Inhalation therapy	.....	907
Infra-red ray	.....	431
Ultra-violet ray	.....	23

Numbers of patients afforded special treatment in the sanatorium for the first time during 1937 :—

Artificial pneumothorax—		
Attempted	.....	32
Satisfactory	.....	21
Unsatisfactory	.....	11
Phrenic evulsion, phrenicectomy or phrenic crush	.....	9
Gold salts (sanocrysin and solganal)	.....	5

Numbers of patients in Elswick on the 31st December, 1937, who were receiving special treatment :—

Artificial pneumothorax	.....	19
Phrenic evulsion, phrenicectomy or phrenic crush—		
Alone	.....	4
In association with artificial pneumothorax	.....	2
Gold salts	.....	2
Artificial light	.....	2

The following Table 32 shows the condition of patients discharged from the Elswick Sanatorium during the year 1937 :—

Classification on admission to the sanatorium.	Condition at time of discharge.	Duration of residential treatment in the sanatorium.					Total.	
		Under 28 days.	1—3 months.	3—6 months.	6—12 months.	More than 12 months.	No.	%
T.B. minus.	Quiescent	—	—	2	6	2	10	31·2
	Improved	1	2	3	6	2	14	43·7
	No material improvement	1	2	1	1	—	5	15·6
	Died in sanatorium	1	1	1	—	—	3	9·4
T.B. plus 1.	Quiescent	—	—	—	—	1	1	7·7
	Improved	1	—	2	2	5	10	76·9
	No material improvement	2	—	—	—	—	2	15·4
	Died in sanatorium	—	—	—	—	—	—	—
T.B. plus 2.	Quiescent	—	—	—	2	1	3	7·7
	Improved	—	2	2	10	6	20	51·3
	No material improvement	—	—	4	1	—	5	12·8
	Died in sanatorium	2	3	3	1	2	11	28·2
T.B. plus 3.	.....	—	—	—	—	—	—	—
Total .....	.....	8	10	18	29	19	84	—

Diagnosis on discharge from observation.			Stay under 4 weeks.	Stay over 4 weeks.		
Tuberculous			3	1	4	30·8
Non-tuberculous			3	6	9	69·2
Doubtful			—	—	—	—

Grand Total 97

PHRENIC NERVE INTERRUPTION.

Between January, 1931, and December, 1933, forty-seven phrenic nerve interruptions were performed at the Elswick Sanatorium by Mr. H. Morriston Davies. Forty-three of the patients have been followed up and their present condition is given below :—

TABLE 33.—*Localisation of lesion.*

	Working.	Not working.	Dead.
Patients with right-sided disease	4	—	3
Patients with left-sided disease	6	5	7
Patients with bilateral disease	3	4	11

TABLE 34.—*Radiological evidence of cavitation (phrenic cases).*

	Working.	Not working.	Dead.
(a) <i>Patients with radiological evidence of cavitation.</i>			
Right-sided disease	2	—	3
Left-sided disease	3	4	7
Bilateral disease	1	4	11
(b) <i>Patients without radiological evidence of cavitation.</i>			
Right-sided disease	2	—	—
Left-sided disease	3	1	—
Bilateral disease	2	—	—
43			

TABLE 35.—*Effect of artificial pneumothorax in combination with phrenic operation.*

Side affected.	Artificial pneumothorax.	Number of patients.		
		Working.	Not working.	Dead.
Right side	Successful	1	—	1
	Failed	3	—	2
Left side	Successful	2	2	4
	Failed	3	1	3
Bilateral	Successful	1	1	1
	Failed	1	3	10
39*				

*In 4 cases no artificial pneumothorax treatment was received.

TABLE 36.—*Classification according to sex and age.*

Age-group.	Total patients.	Males.			Females.		
		Working.	Not working.	Dead.	Working.	Not working.	Dead.
15-19 years.....	3	—	—	—	3	—	—
20-24 years.....	9	—	—	1	2	1	5
25-29 years.....	11	1	2	1	2	1	4
30-34 years.....	6	1	—	1	2	1	1
35-39 years.....	5	1	—	1	—	2	1
40 years and over	9	—	2	5	1	—	1
Total	43	3	4	9	10	5	12

With so small a number, too much stress cannot be placed on detailed analysis but the figures in Table 34 (b) of patients without cavitation are striking.

The fact that 75 per cent. of the female deaths occur in the age-group 20-29 (Table 36) is in accord with the results of more general statistics.

The crude figures—21 dead out of 43 within $4\frac{1}{2}$ years—are hardly encouraging ; on the other hand, there is nowadays a better realisation of the limitations of phrenic operations and later figures should show better results.

I am indebted to Dr. D. O. Hughes for his work in compiling the foregoing statistics.

FYLDE DISPENSARY AREA.

Area (estimated population 88,808) embraces Fleetwood, Thornton Cleveleys, Fylde Rural, Garstang Rural (part), Lytham St. Annes, and Kirkham districts.

Dr. Charnock reports :—

The area is served by two dispensaries, one at Fleetwood for the northern part, and the other at the Elswick Sanatorium where patients in the southern portion attend. The x-ray work and the artificial pneumothorax refills for the whole area are done at Elswick, where also the administrative work and laboratory investigations are carried out. These arrangements work well and seem to give general satisfaction.

Medical colleagues in general practice have been most helpful in advising patients of the dispensary facilities and assisting in their subsequent home treatment.

The work generally is increasing and it is only by careful and willing team work that it can be done.

The artificial light centre for the area is situated at Fleetwood. Light therapy has now taken a definite place in the scheme, and cases of lupus and adenitis continue to obtain benefit. The attendances have been regular and satisfactory. The payment of travelling expenses in necessitous cases, which enables patients to come with regularity, is of the utmost value and is appreciated both by patients and staff.

Nurse Tweedy has given valuable service ; her long experience of the area has proved most useful and she has the confidence of her patients. In June she paid a visit to the High Carley Sanatorium to see the work being done in connection with major surgery.

The helpful co-operation of the sisters and nurses at the Elswick Sanatorium in connection with the out-patient work has in no small degree been responsible for the success of the whole scheme.

SUMMARY OF DISPENSARY WORK.

Number of tuberculous cases under supervision on 31st December, 1937 (Definitely tuberculous, 387; doubtful, 4)		391
	Examinations of <i>new persons</i> and <i>new contacts</i> for diagnosis.	Re-visits or re-attendances of " <i>old</i> " cases and " <i>old</i> " contacts.
Examinations by tuberculosis officer at—		
Patients' homes	78	386
Fleetwood Dispensary	90	738
Elswick Dispensary	102	273
	192	1,011
Attendances of patients at the Fleetwood Dispensary for artificial light treatment (47 individual patients)		1,318
Attendances for artificial pneumothorax treatment (17 individual patients)		168
X-ray work—		
Skiagrams		390
Screen examinations		181
Sputum examinations (positive 30, negative 231)		261
Visits by tuberculosis officer to sanatoria, and pulmonary, special, and public assistance hospitals		13
Special visits by tuberculosis officer (<i>i.e.</i> , interviews with medical officers of health, general hospital officials, &c.)		1
Visits by dispensary nurse to patients' homes—		
Routine visits	1,425	1,620
Application of surgical dressings	192	
Adjustment of splints and surgical appliances	2	
Other actual nursing	1	
Patients' dispensary attendances for attention by nurse—		
Application of surgical dressings	751	766
Adjustment of splints and surgical appliances	15	
Sanitary defects reported to local medical officers of health		2
Sanitary defects which after notification were remedied		2
Disinfections carried out by local sanitary authorities		43
Percentage of new cases referred by medical practitioners, &c., to tuberculosis officer for an opinion as to diagnosis or treatment <i>before</i> statutory notification		98.2%

XXI.—WRIGHTINGTON HOSPITAL AND WIGAN COUNTY DISPENSARY AREA.

<i>Medical Superintendent</i>	DR. E. H. A. PASK.
(Dr. Pask is also consultant tuberculosis officer for the Wigan County Dispensary Area—i.e., the area around the hospital—containing a population of 109,280).	
<i>Visiting Consulting Orthopaedic Surgeons</i>	MR. T. P. McMURRAY. MR. HARRY PLATT.
<i>Visiting Consulting Ophthalmic Surgeon</i>	MR. H. H. BYWATER.
<i>Visiting Consulting Urological Surgeon</i>	MR. C. A. WELLS.
<i>Assistant Tuberculosis Officer</i>	DR. E. H. W. DEANE.
<i>Assistant Medical Superintendent</i>	DR. J. DOBSON.
<i>Junior Assistant Medical Officer</i>	DR. W. G. TIMMIS (to 31/3/38). DR. C. D. COE (from 1/4/38).
<i>Matron</i>	MISS E. MOSELEY.
<i>Assistant Matron</i>	MISS M. L. STRUDWICK.

WRIGHTINGTON HOSPITAL, APPLEY BRIDGE, NEAR WIGAN.

The Wrightington Hospital is situated close to the high road between Standish and Parbold, about six miles north-west of Wigan; altitude 300 feet above sea level. The area of the estate is 159 acres. A scheme for the adaptation of the Hall as a nurses' home and the erection of new buildings to provide accommodation for 226 patients was adopted by the County Council and approved by the Ministry of Health towards the end of 1927. The first patients were admitted on the 14th December, 1931.

The accommodation provided is utilised as under :—

Adults : Three one-storey pavilions (two for men and one for women). One pavilion contains 30 beds, and at one end for isolation a small ward for four beds and two single cubicles; the other two pavilions each contain 31 beds for non-pulmonary cases and at one end cubicles for 10 combined cases of pulmonary and non-pulmonary tuberculosis		118 beds.
Children : Two one-storey pavilions for non-pulmonary tuberculosis; each pavilion containing 44 beds, and at one end a ward for four beds, and two single cubicles for isolation on admission.....		100 beds.
Isolation block for outbreaks of infectious disease		8 beds.
		226 beds.

All the buildings are heated.

In addition to the patients' pavilions, there are the following buildings :—Treatment block, kitchen block, official block, power house, laundry, quarters for nurses and maids (modern portion of the Hall and an annexe), medical superintendent's house, seven cottages for male employees, outbuildings (utilised for garages, workshops, stores, etc.).

The water supply is obtained from a well ($1\frac{1}{4}$ miles distant), which is the property of the County Council. Sewage works are installed on the estate. The electric light is from the public supply.

The capital cost of the Wrightington Hospital has worked out at £670 per bed with land, towards which the Ministry of Health made a grant of £40,680.

The Lancashire Education Committee have kindly arranged for a lecturer to visit the institution to speak on social history and current events to adult patients ; there are two part-time instructresses who teach handicrafts to both men and women. For the children there is a head teacher, with three assistants.

During the year, 154 patients received from the visiting dental surgeon, Mr. J. J. Ward, some form of dental treatment, particulars of which will be found in Chapter XXVI.

The weekly maintenance charge for 1937-38 was £3 0s. 10d. per patient ; this includes 13s. 2d. for loan charges.

The average length of stay of patients at Wrightington during 1937 was as under :—

Patients discharged	.....	.....	.....	.....	.....	234 days.
Patients who died in the hospital	.....	.....	.....	.....	.....	224 days.
Observation cases discharged	.....	.....	.....	.....	.....	41 days.

Dr. Pask reports as follows :—

During the year, 298 patients were admitted and 261 were discharged. There were 32 deaths (4 of cases not suffering from tuberculosis). The number of admissions and discharges closely approximates that for previous years, but the number of deaths shows a steady decrease (in 1935 there were 50 deaths).

Table 37 on page 125 gives a list of the lesions of 264 patients who were discharged or died, and the immediate results of treatment.

It will be seen that in addition to bone and joint tuberculosis there are a considerable number of cases of tuberculous peritonitis, tuberculous peripheral glands, and genito-urinary tuberculosis. The results of treatment of tuberculous peritonitis are very satisfactory—73 per cent. of the cases (including adults and children) were discharged with the disease quiescent. The patients not responding to treatment are those who have had surgical interference before admission, which has resulted frequently in a faecal fistula.

TABLE 37.—*Condition on discharge of 264 patients suffering from tuberculosis.*

Lesion.	Adults					Children				
	Quies.	Imp.	Stat.	Worse	Died.	Quies.	Imp.	Stat.	Worse	Died.
Spine—										
Cervical	2	—	1	—	1	—	—	—	—	—
Dorsal	7	3	1	—	—	6	1	—	—	—
Dorso-lumbar.....	—	1	—	—	1	1	—	—	—	—
Lumbar	4	—	—	—	—	3	—	—	—	—
Lumbo-sacral	—	1	—	—	—	—	—	—	—	—
Coccyx	—	1	—	—	—	—	—	—	—	—
Hip	3	2	3	—	1	13	4	1	—	—
Knee	5	1	—	—	—	11	—	—	—	1
Ankle	1	—	—	—	—	—	—	—	—	—
Bones of foot	3	—	—	—	—	1	—	—	—	—
Shoulder	1	—	1	—	—	—	—	—	—	—
Elbow	1	—	—	—	—	—	1	—	—	—
Radius	1	—	—	—	—	—	—	—	—	—
Wrist	—	2	—	—	—	—	—	—	—	—
Bones of hand	—	—	—	—	—	1	—	—	—	—
Sternum	—	—	—	—	—	1	—	—	—	—
Lupus	—	—	—	—	—	—	1	—	—	—
Peripheral glands	6	4	—	—	—	10	7	—	—	—
Peritonitis, etc.	18	3	—	—	3	12	2	1	—	2
Lungs and pleura	—	—	1	—	—	—	1	—	—	—
Genito-urinary	3	6	1	—	2	—	—	—	—	—
Ischio-rectal abscess	—	1	—	—	—	—	—	—	—	—
Bursitis	1	—	—	—	—	—	—	—	—	—
Subcutaneous abscess	—	1	—	—	—	—	—	—	—	—
Ulceration chest wall and breast	—	1	—	—	—	—	—	—	—	—
Abscess groin	1	—	—	—	—	—	—	—	—	—
Multiple lesions	9	5	3	—	3	3	2	—	—	2
Combined pulmonary and non-pulmonary	18	17	8	—	12	—	1	—	—	—
Total	84	49	19	—	23	62	20	2	—	5
	175					89				

There were 27 cases of tuberculosis of the peripheral glands, all being in the cervical region except one. Most of them were admitted owing to their failure to respond to artificial light treatment at the dispensaries; 18 required operation (12 were excised, 6 were incised), and the remainder were aspirated. The immediate results of treatment are usually satisfactory, but quite a number of cases admitted with tuberculous lesions elsewhere, on inquiry give a history of tuberculous glands of the neck as the initial lesion, so that whilst tuberculosis of the glands of the neck is not usually a severe condition in itself, the possibility of developing subsequent tuberculous lesions elsewhere must always be borne in mind.

Cases of renal tuberculosis which were admitted may be divided into two classes: (i) Those with unilateral disease, and (ii) those with bilateral disease. In the former, the operation of nephrectomy is performed and the immediate results are satisfactory, but in spite of this there are a number who return to hospital at a later date (often after an interval of several years) with disease on the other side. Cases of bilateral renal tuberculosis usually respond satisfactorily at first to ordinary sanatorium routine without any special form of treatment. A certain number receive a course of tuberculin, but I am not convinced that the results are any better than in those who have not had this form of treatment. Unfortunately in bilateral cases there is a tendency to relapse. Patients having secondary urinary infection are benefited by a course of urinary antiseptics.

The treatment of bone and joint tuberculosis is in the main conservative. Rest is applied to the affected part by means of appropriate apparatus. This form of treatment is effective in the vast majority of cases, and if ankylosis occurs it is obtained in the optimum position. In the few cases in which an operation is performed, it is never undertaken until the disease is considered to be reasonably quiescent and only after a period of prolonged careful observation; the selection of cases requires considerable care. The only exception to this rule is in cases where the disease steadily progresses in spite of treatment, and amputation becomes necessary.

Two cases of tuberculosis of the spine developed symptoms of acute intestinal obstruction, and at operation the cause of the obstruction was found to be due to bands. In one case the small band was divided, but in the second there was a volvulus of the strangulated loop of bowel and 18 inches had to be resected—both cases recovered. In this connection

it is interesting to note that acute appendicitis is exceedingly rare in cases of tuberculosis, whether pulmonary or non-pulmonary, and in over 25 years' experience of both types of tuberculosis I can only recall one definite case. Symptoms suggesting acute appendicitis are common but are almost invariably due to intra-abdominal tuberculosis.

In addition to the 264 patients seen in Table 37, 17 adults and 12 children (most of whom were admitted for observation purposes) were found to be suffering from non-tuberculous conditions. Four of these patients died—2 osteomyelitis, 1 spinal meningitis (non-tubercular), and 1 Addison's disease (a primary atrophy of the suprarenal glands, with no evidence of tuberculosis). The other cases included patients suffering from thrombo-angeitis obliterans, osteochondritis of spine, protrusio acetabuli, Hunner's ulcer of the bladder, sacro-iliac strain, flat foot, and carcinoma of the male breast. These cases were all admitted because there were symptoms suggesting the possibility of tuberculosis, thus indicating indirectly the protean manifestations of lesions due to the tubercle bacillus.

All children on admission have Mantoux tests done and, during the year, 73 tests were positive and 1 negative ; in the latter case the child was sent in for observation purposes and the diagnosis proved to be transient arthritis of the hip-joint.

Patients of 15 years of age and under are all immunised against diphtheria as a routine ; they are given three doses of 1 c.c. of toxoid-antitoxin floccules after admission at weekly intervals. Since we have resorted to this we have not had any serious outbreak of diphtheria in the children's wards. During the year we have been singularly free from any epidemic of infectious disease amongst the children.

Artificial light treatment was given to 181 patients during the year. General light baths are given with the various carbon arc lamps—20, 30 and 75 amperes—three times a week, with a maximum exposure of one hour. Focal baths by means of the "Alpine Sun" mercury vapour lamp are employed for the treatment of sinuses ; the lamp being 2½ feet from the affected part to commence with and the distance gradually shortened to 1 foot. Local light is given with the Kromayer and Finsen Reyn lamps. These are used chiefly for lupus, the affected part being in direct contact with the lamp. Artificial light is a most useful form of adjuvant treatment.

The following is a list of operations performed during 1937 —

Amputation (leg 2, foot 1, toe 2, finger 2)	7
Appendicectomy	1
Arthrodesis (hip 1, ankle 1, knee 2)	4
Closure of faecal fistula	1
Costotransversectomy	1
Curettage Brodie's abscess tibia	1
Excision of caecum and ilio-coecal anastomosis	1
Excision of glands axilla	1
Excision of glands neck	11
Exploration of shoulder joint	1
Exploration of sinus	1
Fixation of spine (Albee)	2
Implantation of ureter into pelvic colon	1
Incision and drainage of retropharyngeal abscess	1
Incision of frontal abscess	1
Intestinal obstruction (volvulus 1, band 1)	2
Laparotomy	1
Lorenz osteotomy	1
Nephrectomy	4
Orchidectomy	3
Removal of exostosis tibia	1
Sequestrectomy foot	1
Tarsectomy	1
Transtrochanteric osteotomy	3

Minor operations—

Abdomen tapped	2
Aspiration of abscess	333
Aspiration of chest	6
Aspiration of hydrocele	5
Cystoscopy	13
Incision of abscess	8
Incision of finger	1
Incision of glands neck	6
Intravenous saline	2
Laryngoscopy under general anaesthetic	1
Lumbar puncture	4
Scalp suture	1

During the year, 140 plasters were applied and 29 casts were taken for making celluloid supports. These supports are all made at the hospital, and form a light serviceable appliance for patients who are ambulant on discharge. The first and final layers of the celluloid are treated with calcium chloride in order to render them non-inflammable.

Twenty-four post-mortem examinations were performed during the year, and, as in previous years, special efforts were made to obtain relatives' consent for this useful and instructive work. Our museum of specimens thus obtained has proved of great value for teaching purposes.

Laboratory work.—Examinations of the following specimens were made during the year in the hospital laboratory :—Sputum : hospital patients, 58 (positive 25, negative 33) ; dispensary patients, 603 (positive 89, negative 514). Urine, 5 ; pus, 3.

Material for inoculation tests and special pathological investigation, which was sent away for examination, consisted of :—

Guinea-pig inoculation : Urine 62 ; pus, 3 ; faeces, 1 ; ascitic fluid, 1.

Histological examination : Kidney 4, ; mitral valve, 1 ; gland neck, 3 ; liver, 1 ; spleen, 1 ; omentum, 2 ; muscle, 1 ; piece of spinal cord, 1 ; suprarenals, 1 ; thymus gland, 1 ; piece of pancreas, 1.

Typing of tubercle bacillus : Abdominal gland, 1 ; pus, 7.

Blood for Wassermann reaction, 16 ; diphtheria swabs, 20 ; blood urea, 13 ; cerebro-spinal fluid, 2 ; blood for gonococcus complement fixation, 1.

The work in connection with cultivation of tubercle bacilli has been continued by my assistant, Dr. Dobson, and forms the subject of Chapter VI.

The x-ray department, in addition to catering for the hospital, carries out the work in connection with the Wigan County Dispensary Area, and shows a steady increase in the work done. During 1937 the following radiographs were taken :—Wrightington Hospital patients, 1,890 ; Wigan County Dispensary patients, 579.

Periodic visits have been paid by Mr. H. Platt, Mr. T. P. McMurray, Mr. C. A. Wells, and Mr. H. H. Bywater, the consulting surgeons, and I have to acknowledge their valuable service and help. Mr. J. J. Ward, the dental surgeon, visits weekly, and the improvement seen in patients after attention to the teeth is very noteworthy. A statement of the dental work carried out at Wrightington is given in Chapter XXVI.

A meeting of the County Tuberculosis Committee was held at Wrightington on the 15th September, 1937, and on the same day 30 new members of the County Council visited the hospital. They were addressed by the Vice-Chairman of the Committee (Sir Thomas Tomlinson) and Dr. Cox on various aspects of the County tuberculosis scheme. A demonstration was given of the patients undergoing treatment, and also the end results of treatment in other cases. A tour of the hospital was afterwards made.

Dr. J. E. Chapman, of the Ministry of Health, inspected the hospital on the 9th November, 1937. Members of the Post-Graduate Class M.Ch. (Orth.), Liverpool University, paid several visits to the hospital during the year to receive instruction in the diagnosis and treatment of tuberculosis of the bones and joints by Mr. McMurray.

Other visitors included :—Mr. W. E. Quayle, Local Government Board, Isle of Man ; Dr. B. A. Dormer, Union Health Department, South Africa ; Dr. R. J. Matthews, Welsh Board of Health ; Dr.

Roberts, Australia ; Lieut.-Gen. Sir Matthew Fell, K.C.B., C.M.G., late Director General A.M.S. ; the sisters of the Lancashire County sanatoria and pulmonary hospitals.

The religious needs of the patients have been looked after by the regular attendance of our three chaplains—Rev. C. E. Brett, Rev. W. Gainsborough, and Father Barry. During the latter part of the year, the Rev. W. Gainsborough left the district and his place was taken by the Rev. W. H. Allan, of Wigan. The Bishop of Blackburn visited the hospital twice during the year to hold Confirmation services—17 patients were confirmed.

My grateful thanks are due to many friends of the institution who have come to entertain the patients from time to time. During the year we had visits from five concert parties and their efforts were very much appreciated. In addition, various other entertainments were provided for the children, *viz.*, Punch and Judy show, and bonfires and fireworks on Guy Fawkes' Day. All the patients enjoyed the special celebrations on Coronation Day and at Christmas.

The Kodascope, as before, has been used for weekly cinema programmes during the winter months.

The hospital library is kept well stocked, thanks to generous annual grants from the County Tuberculosis Committee and gifts of books from the Red Cross Society. This facility is much appreciated by the patients. In addition to general light literature there is quite a demand for books on technical subjects. The nursing staff are also provided with an adequate library which includes books of reference on medical and nursing subjects to aid them in their studies.

The educational classes for the adult patients have been continued. Weekly lectures are given by Mr. W. Bruce, and handicraft classes are held thrice weekly by Miss Roll and Mrs. Foster. This latter work is of great value from the point of view of keeping the patients occupied, and numerous instances have been brought to our notice of patients supplementing their income on returning home by making articles for sale.

As regards the work done in the hospital school, Mrs. Keyworth, the head teacher, reports as follows :—

Number of children admitted during the year .....	.....	172
Number of children discharged during the year.....	.....	81
Average number on the register .....	.....	92

The new schoolroom block was completed and opened for use on the 24th May, 1937. An extra member was added to the teaching staff at the beginning of the school year so that convalescent classes could be formed and carried on in the schoolroom. Ambulant boys and girls attend these daily classes, and their time table, in addition to the elementary curriculum, consists of handwork, nature walks, organised games, and the dancing class.

Several exhibitions of handwork have been held in the schoolroom for the benefit of visitors to the hospital. In May, 1937, at the request of the Educational Handwork Association, an exhibition of soft toys made by the senior girls was given at their Annual Conference in Blackpool. The Lancashire Education Committee again included the hospital handwork in their exhibition of work from schools at the Royal Lancashire Agricultural Show held at Withington, Manchester, in August, 1937. The Fourth International Exhibition of Cripples' Handwork was held in Edinburgh from the 14th to the 16th October, 1937, and a varied selection of handwork was sent from this hospital. Twelve articles were entered for competition and the award of diplomas, and each obtained an award, *viz.*, four in the 1st class, six in the 2nd, and two in the 3rd class.

The annual pantomime did not take place this year.

Essays on birds and trees were sent to the Royal Society for the Protection of Birds for the "Bird and Tree Competition," which is open to all schools in the British Isles. The children were successful in gaining certificates and two medals, and thus obtained for themselves a high rank amongst the schools of Lancashire. The Society's report says : "The charmingly individual papers from Wrightington Open-air Hospital School make plain what can be done even by invalid children and how much pleasure can be thus given them under sympathetic guidance."

There was no Board of Education inspection during the year.

During the year, seven probationer nurses, on completion of their training, were successful in passing the hospital-leaving examination in anatomy, physiology, hygiene, and nursing. Two probationer nurses obtained the Preliminary Certificate of the General Nursing Council before proceeding to general hospitals affiliated to Wrightington, thus being excused one year of their general training.

I wish to express my thanks to my assistants, Dr. Dobson and Dr. Timmis, to the matron, Miss Moseley, and to the nursing and clerical staffs for their untiring energy and zeal, which is very much appreciated, as evidenced by the numerous grateful letters which are received from patients after discharge.

Details of work carried out at Wrightington during 1937 :—

Artificial pneumothorax—						
Inductions	.....	.....	.....	.....	.....	2
Refills	.....	.....	.....	.....	.....	17
Gold salts—						
Sanocrysin injections	.....	.....	.....	.....	.....	91
Hydnocarpate oil injections		.....	.....	.....	.....	43
T.B. vaccine injections	.....	.....	.....	.....	.....	170
Uroselectan B. injections	.....	.....	.....	.....	.....	44
Barium meals	.....	.....	.....	.....	.....	8
Blood sedimentation tests (Cutler's method)						604
Mantoux tests	.....	.....	.....	.....	.....	74
X-ray work—						
Screen examinations	.....	.....	.....	.....	.....	139
Skiagrams	.....	.....	.....	.....	.....	1,890
Sputum examinations (positive 25, negative 33)						58

Numbers of patients afforded special treatment for the first time during 1937 :—

Artificial pneumothorax—						
Attempted	.....	.....	.....	.....	.....	2
Satisfactory	.....	.....	.....	.....	.....	1
Unsatisfactory	.....	.....	.....	.....	.....	1
Gold salts (sanocrysin)	.....	.....	.....	.....	.....	7
Hydnocarpate oil	.....	.....	.....	.....	.....	3
T.B. vaccine	.....	.....	.....	.....	.....	7
Uroselectan B.	.....	.....	.....	.....	.....	21

Numbers of patients in Wrightington Hospital on the 31st December, 1937, who were having special treatment :—

Gold salts (sanocrysin)	.....	.....	.....	.....	.....	2
Artificial light	.....	.....	.....	.....	.....	124
Hydnocarpate oil	.....	.....	.....	.....	.....	1
T.B. vaccine	.....	.....	.....	.....	.....	2

WIGAN COUNTY DISPENSARY AREA.

Area (estimated population 109,280) embraces Ashton-in-Makerfield, Hindley, Ince-in-Makerfield, and Wigan Rural districts.

Dr. Pask reports :—

During 1937 the work in this area has been conducted in much the same way as previously and, once again, my thanks are due to the medical practitioners for their useful co-operation by referring for an opinion before notification 90 per cent. of the new cases (excluding contacts). Of a total number of 406 cases examined, 69 per cent. were regarded as non-tubercular, and, fortunately, the number of new positive sputum cases continues to show a slight decrease.

An investigation of the probable source of infection in new cases, on which I reported last year, has been continued during 1937, and from 122 definite cases a family history of tuberculosis was obtained in 41 instances, or 33 per cent., compared with 41 per cent. last year.

For the useful and painstaking work done in the patients' homes and at the dispensary, which is much appreciated by the patients and myself, I would like to express thanks to the tuberculosis health visitors (Nurse E. Walters and Nurse M. J. Evans).

I am grateful also to the members of the Wigan County District Care Committee for the assistance given to 51 patients at a cost of £90 14s. 11d.

Of 603 sputum examinations 89 were positive and 514 negative ; 12 patients received injections with lipiodol ; refills for artificial pneumo-

thorax numbered 99 (11 patients) ; and x-ray examinations numbered 1,041 (screenings 462, skiagrams 579).

On the 9th November, 1937, Dr. J. E. Chapman, Senior Medical Officer of the Ministry of Health, visited the dispensary.

The work of the artificial light department has been conducted on the usual lines, general light sessions being held twice weekly. The cases attending are mainly those with glandular trouble, but abdominal and other forms of tuberculosis are also dealt with. A special weekly session is held for lupus cases and, as in previous years, in addition to general and local light treatment, injections with eulykol and spiking with acid nitrate of mercury have been carried on with gratifying results. During the year, 111 patients were treated. The average attendance shows a slight increase as a result of a greater number of glandular cases being referred for treatment. At the end of the year, 61 patients were still receiving treatment.

Summary of Dispensary Work.

Number of tuberculous cases under supervision on 31st December, 1937				
(Definitely tuberculous, 638 ; doubtful, 10)				648
		Examinations of <i>new persons</i> and <i>new contacts</i> for diagnosis.	Re-visits or re-attendances of " <i>old</i> " cases and " <i>old</i> " contacts.	
Examinations by tuberculosis officer at—				
Patients' homes	.....	97	316	
Wigan Dispensary	.....	309	1,578	
Attendances of patients at the Wigan Dispensary for artificial light treatment				4,191
(111 individual patients)				
Attendances for artificial pneumothorax treatment (11 individual patients)				99
Attendances for eulykol (hydnocarpates) treatment				147
Care committee meetings attended by—				
(a) Tuberculosis officers	.....			10
(b) Tuberculosis health visitors	.....			16
Visits by tuberculosis officers to sanatoria, and pulmonary, special, and public assistance hospitals				24
Special visits by tuberculosis officers (<i>i.e.</i> , interviews with medical officers of health, general hospital officials, &c.)				12
Visits by dispensary nurses to patients' homes—				
Routine visits	.....		2,424	} 2,905
Application of surgical dressings	.....		177	
Adjustment of splints and surgical appliances	.....		259	
Other actual nursing	.....		45	
Sanitary defects reported to the local medical officers of health				6
Sanitary defects which after notification were remedied				5
Disinfections carried out by local sanitary authorities				122
Percentage of new cases referred by medical practitioners, &c., to tuberculosis officer for an opinion as to diagnosis or treatment <i>before</i> statutory notification				90.5%

XXII.—CHADDERTON PULMONARY HOSPITAL,
NEAR OLDHAM.

Visiting Medical Superintendent *DR. E. T. HOLDEN.*
(Dr. Holden is also a regional medical officer of the Ministry of Health).

Matron *MISS I. FELSTEAD.*

An agreement was made on the 1st October, 1919, with the Chadderton, Royton, and Crompton Joint Hospital Board for the use of the buildings at Racefield, erected as a smallpox hospital, for the treatment of patients suffering from pulmonary tuberculosis. Accommodation is provided for 44 female patients. The County Council are under an obligation to vacate the premises in case of an epidemic of smallpox.

The weekly maintenance charge for 1937-38 was £2 4s. 9d. per patient.

The average length of stay of patients at Chadderton during 1937 was as under :—

Patients discharged	.....	.....	.....	.....	400 days.
Patients who died in the hospital	.....	.....	.....	.....	250 days.
Observation case discharged	.....	.....	.....	.....	92 days.

Dr. Holden reports as follows :—

During the year, 73 patients were admitted, 47 discharged (including four who were transferred to other institutions), and 30 died ; in addition, two cases sent in for observation and diagnosis were discharged as non-tuberculous. Of the 30 patients who died, nine had been in the hospital for under one month.

An analysis of the age-groups of the patients admitted showed that 36·4 per cent. were under age 25 and 18·9 per cent. over age 50.

As far as possible the usual routine of the hospital has been followed—that is, to place every patient admitted on some form of special treatment irrespective of the nature and extent of the pulmonary lesions unless there have been very definite contra-indications. This procedure has been more difficult than usual owing to the exceptionally large number of cases with a prognosis so obviously hopeless that nothing could be attempted beyond the alleviation of symptoms. For those whose condition held out some chance of improvement the following special forms of treatment have been in use :—Artificial pneumothorax, gold

salts (sanocrysin), and nordalin. As an adjuvant to the other special treatments the Apneu-Collison inhaler has been found of great use, especially when complications such as bronchitis, asthma, and laryngitis have been present.

Artificial pneumothorax. Sixteen patients were treated by this method during the year. In four instances the treatment had to be abandoned as unsatisfactory, and four of the successful cases were given gold salts in addition.

Gold salts. Sanocrysin was given to 21 patients. The dosage was the same as in previous years, namely, 0.01 gm. for the initial injection rising to a maximum of 0.35 gm. The average amount given during a complete course was 6.5 gm. Treatment had to be abandoned in six cases for the following reasons :—Dermatitis 3, diarrhoea 1, unsatisfactory general condition 2 ; intramuscular injections of calcium gluconate were found useful in the treatment of the dermatitis. At the first sign of any complication gold treatment was stopped immediately and not resumed as, in my experience, a recurrence of the trouble is inevitable if an attempt is made to continue with further injections.

Nordalin. After three years' experience of this form of oral treatment, the following personal conclusions are based upon the observation of 31 patients in an advanced stage of pulmonary tuberculosis who received no other form of special treatment :—

(1) The treatment is undoubtedly worth a trial in patients under 20 years of age. A surprising amount of improvement in both their pulmonary and general condition can be effected and, in my opinion, this is greater than that obtained during a comparable period by routine hospital treatment alone.

(2) No material effect on the course of the disease is produced in patients over age 20.

Details of work carried out at Chadderton during 1937 :—

Artificial pneumothorax—						
Inductions	.....	.....	.....	.....	.....	16
Refills	.....	.....	.....	.....	.....	250
Gold salts (sanocrysin injections)	.....	.....	.....	.....	.....	430
Mantoux tests	.....	.....	.....	.....	.....	2
X-ray work—						
Screen examinations	.....	.....	.....	.....	.....	461
Skiagrams	.....	.....	.....	.....	.....	149
Sputum examinations (positive 196, negative 344)	.....	.....	.....	.....	.....	540

The numbers of patients afforded special treatment for the first time during 1937 were :—

Artificial pneumothorax—		
Attempted	.....	16
Satisfactory	.....	12
Unsatisfactory	.....	4
Gold salts (sanocrysin)	.....	21
Nordalin	.....	7

Numbers of patients in the hospital on the 31st December, 1937, who were receiving special treatment :—

Artificial pneumothorax	.....	9
Artificial pneumothorax and gold salts (sanocrysin)	.....	2
Gold salts (sanocrysin)	.....	10
Nordalin	.....	4

Dental treatment. The dental condition of the patients admitted was, on the whole, very poor and suitable treatment was essential for the maximum benefit to be derived from their stay in the institution. This was of particular importance if sanocrysin injections were given. We have to thank the dentist, Mr. J. H. Walker, for his conscientious work.

Details of the dental treatment given during 1937 are as follow :—

Number of individual patients treated.	.....	38
New dentures provided—		
Complete sets	.....	2
Partial sets	.....	1
Repairs to dentures	.....	1
Extractions	.....	76
Fillings	.....	17
Scalings and cleanings	.....	6
Other operations	.....	25
Number of inspections	.....	35

Occupational therapy at Chadderton is of necessity of the lightest character and only applicable to very few patients. Those who are able are given light domestic tasks, and when the weather is suitable they go for walks graduated according to their individual capabilities.

Recreational facilities. The recreation of the patients is well catered for. Good use is always made of the well-stocked library, and 866 books were lent out during 1937 (as compared with 646 in the previous year). Whist drives, concerts, cinematograph shows, etc., are held periodically, and wireless is fitted in every ward with headphones for each bed. An excellent hard tennis court is provided for the use of the staff.

Coronation Day celebrations. The wards were beautifully decorated, much ingenuity being shown in producing the various effects. A short

service, held in the morning, was attended by the patients and staff. Opportunity was afforded afterwards of listening-in to the broadcast of the Coronation procession and the service in the Abbey. During the afternoon a whist drive was held, special prizes being given, and in the evening the patients presented a most enjoyable and talented entertainment which was greatly appreciated by a large audience of relatives and friends. During an interval, His Majesty's speech was relayed to the wards by loud speaker. A special word of thanks is due to Sister Goodall for the time and patience expended in training the patients who provided the entertainment.

Regular visits were paid to the hospital by the clergy of the various denominations, and we are very grateful to these gentlemen for their attention to the spiritual welfare of the patients.

On the 4th June, the hospital and grounds were inspected by the members of the Chadderton, Crompton, and Royton Joint Hospital Board, and on the 27th September by the members of the Crompton Urban District Council.

Unfortunately the hospital is not recognised as a training centre for the examinations held under the auspices of the Tuberculosis Association, owing to the number of beds being slightly below that stipulated by the regulations. This, I venture to suggest, is a mistake as our nurses, although gaining experience equal to that obtained in hospitals with the requisite number of beds, are precluded from obtaining certificates of efficiency unless they transfer to another institution.

Our thanks are again due to the County Council for their grants towards the provision of special fare at Christmas, books for the patients and staff, and the hire of cinematograph films ; to the various concert parties who have done such excellent work ; and to Dr. Fletcher and various friends for their kindly gifts of books and periodicals.

I have also to thank my colleagues of Dispensary Area No. 3 for their continued helpful co-operation, and to express my appreciation of the good work done during the year by the matron (Miss Felstead), Sister Goodall, and the staff.

XXIII.—HEATH CHARNOCK PULMONARY HOSPITAL, NEAR CHORLEY.

Visiting Medical Superintendent DR. J. RIGBY.

(Dr. Rigby is also medical officer to the Chorley Joint Hospital Board, and the medical officer of health of the Chorley Rural District).

Matron MISS H. SINCLAIR.

In 1914, by agreement with the Chorley Joint Hospital Board, the County Council leased $1\frac{1}{2}$ acres of land adjoining the Board's isolation hospital on which they erected, equipped, and furnished two pavilions, dining hall, and quarters for the staff.

During 1937, the original staff accommodation was converted into a treatment room, x-ray room, and dark room, and the administrative block of the adjoining isolation hospital was enlarged by the Joint Board to accommodate the pulmonary hospital staff.

The Joint Board are, by agreement, responsible for the maintenance, nursing, and treatment of the patients, the County Council paying to them the cost thereof.

Accommodation is provided for 39 female patients—31 in the two pavilions, and 8 in wooden sleeping shelters.

The weekly maintenance cost for 1937-38 was £2 1s. 7d. per patient.

The average length of stay of patients at Heath Charnock during 1937 was :—

Patients discharged	.....	171 days.
Patients who died in the hospital	.....	293 days.

Dr. Rigby reports as follows :—

In March, the male patients were transferred to other institutions and replaced by females, leaving the hospital for one sex only. The result has been a greater number of admissions than usual. During the year, 80 patients were admitted, 19 patients were discharged having made some progress towards recovery, 22 were discharged with no material improvement in their condition, 12 were transferred to other institutions, and 26 died.

Specimens of sputum examined at the hospital numbered 180, 126 of which were positive. The sputum of the patients in which tubercle bacilli are not found is examined more often than the chronic cases. Two specimens were sent to the Public Health Laboratory, Manchester, for guinea-pig inoculation test.

The installation of an x-ray apparatus and the provision of a treatment room in April were welcome additions to the institution.

Up to the end of December, 88 skiagrams have been taken and 32 screen examinations made.

Two cases have been treated by artificial pneumothorax but in both instances a satisfactory collapse was not obtained after many refills.

Gold treatment (solganal) was given to eight patients during the year and, of these, six made remarkable progress both in their lung condition and general health. Though the number of patients treated was small the results have been very encouraging.

Two cases required aspiration of the pleuritic effusion.

Now that the hospital is for women only, the recreation accommodation has been easier to arrange. The recreation hut is available as a sewing and ironing room, and the sitting room, built at the same time as the treatment room, is used for reading only. The library, which was looked after by members of Toc H when we had men patients, has been taken over by the staff, and a plentiful supply of books is available.

Regular visitors to the hospital included the Vicar of Adlington, the Rev. G. Gamble, and the Rev. F. Formby.

The annual garden party and whist drives were held as in previous years. Motor coach rides are very popular with the patients who are able to undertake the journeys, and during 1937 visits were paid to Morecambe, Southport, Blackpool, and Chester via the Mersey Tunnel. Food is always taken, the patients preferring to picnic. For those patients who were unable to travel far, picnics in the adjoining countryside were arranged.

The concert parties from Bolton and Chorley paid their usual visits which are looked forward to each year as a source of great merriment.

Christmas was a time of rejoicing for all ; the Christmas tree was well stocked with gifts from ex-patients and friends of the hospital, who generously come forward every year, and the Chairman of the Joint Hospital Board, Alderman J. Sharples, again distributed the gifts. The Mayor of Chorley, during his tour of the hospitals, arrived in time for the sketch provided by the patients, an item in the concert arranged by a group of entertainers from Chorley.

The work of the hospital has gone on smoothly during the year, due to the team work of the matron, the sister, and the staff, with the result that I have not had to enquire into any one complaint brought forward by any of the patients.

XXIV.—COST OF THE TUBERCULOSIS SCHEME.

The report so far has dealt entirely with measures for the prevention and treatment of tuberculosis, and with vital statistics, but it is also desirable that the cost of the scheme should be recorded.

The following statement shows the expenditure under the principal headings incurred by the Lancashire County Council on the operation of their tuberculosis scheme :—

	1937-38 £	Per cent. of total.
1. Maintenance of 25 dispensaries (including artificial light departments, x-ray plants, salaries of staff, provision of special nourishment) and home supervision of 7,367 patients	47,766	22·9
2. Accommodation at sanatoria and hospitals provided, leased, or rented by the County Council for the treatment of patients suffering from tuberculosis (average number of beds occupied, 973)	143,577	68·9
3. Patients' travelling expenses (proceeding to and from institutions, and for special treatment at dispensaries)	3,342	1·6
4. Administration expenses (including salary of Central Tuberculosis Officer and staff, travelling expenses, printing, stationery, proportion of cost of County Architect's, Clerk of Council's and County Treasurer's departments) and research	13,792	6·6
Total gross expenditure	£208,477	100·0
<i>Less</i> income from beds rented to other authorities, Ministry of Pensions in respect of tuberculous ex-service men, sale of produce, rents from land, etc.	8,569	
Total net expenditure	£199,908	
Equivalent rate in the £	4·90d.	

It should be remembered that tuberculosis is one of the services aided by the General Exchequer Contribution which succeeded the 50 per cent. grant discontinued by the Local Government Act of 1929. It is not possible to state what proportion of the General Exchequer Contribution is in respect of tuberculosis expenditure.

The weekly maintenance charges for patients at the several sanatoria and hospitals of the Lancashire County Council are included in the report for the particular institution.

XXV.—CARE WORK.

WHAT IS CARE WORK ?

A definition of care work is not easy to give, but a comprehensive one might be :—All that part of the anti-tuberculosis scheme which does not directly deal with diagnosis and special treatment in hospital, sanatorium or dispensary. More particularly it may be described as the efforts directed to attain or maintain the patient's social welfare, so that he and his household may be in the best environment to take advantage of medical knowledge concerning tuberculosis. Assuming the above definition is reasonable, it is clear that care work is not only very comprehensive but consists of many factors, even, for example, measures taken to prevent spread of the disease in patients' homes.

In the country generally, the dividing line between care work under the official scheme and care work done by voluntary committees varies considerably. In Lancashire, however, since the inception of the scheme and with subsequent expansion, a considerable proportion of items of a care nature are done under the official scheme. The following statement shows readily where the division takes place in Lancashire :—

- (a) *Items of Care Work done for patients in the whole Administrative County under the OFFICIAL SCHEME (with approximate costs for 1937) :*
1. Provision of special nourishment (milk) on medical grounds (£3,050).
 2. Thermometers, paper handkerchiefs, and sputum cups (£850).
 3. Appliances, *e.g.*, splints, crutches, supports, surgical boots (£596).
 4. Dressings, if patients are suffering from "open" surgical tuberculosis (£375).
 5. The loan of bedsteads and mattresses, and nursing requisites (£50 for replacements).
 6. Payment of railway fares to and from institutions, and cost of removal of patients by ambulances or taxis (£3,342).
 7. Training and re-settlement in a tuberculosis colony (£1,100).
 8. Dental attention (dispensary patients £240 ; institutional patients £410).
 9. Wooden sleeping shelters (£75 for repairs and removals).
 10. Public lectures—propaganda—(£65).
- (b) *Items of Care Work, additional to (a) above, done in the whole Administrative County either by the voluntary CARE committees or through the dispensary CARE organisation :*
11. Provision of milk, meat, and groceries on economic grounds for patients or family.
 12. Provision of clothing and footwear.
 13. Occasional payment of rent.
 14. The committees occasionally purchase bedsteads, invalid carriages, and nursing requisites, articles which could be paid for out of the tuberculosis funds.

OUTLINE OF THE LANCASHIRE CARE SCHEME.

The statutory power for undertaking care work is contained in the Public Health Act 1936, Section 173 (2), which states : “ The council of a county or county borough may make such arrangements as they think desirable for the after-care of persons who have suffered from tuberculosis.”

The extended care scheme adopted by the County Council in August, 1924, and amended in November, 1936, is carried out in accordance with the following policy :—

(a) For the portions of the County where the 15 voluntary care committees (covering a population of 786,002) already function, the work is done by these committees, and annual grants are made to them by the County Council of 50 per cent. of their expenditure on assistance to patients provided no donation is invited or received from another local authority or other committee of the County Council.

(b) For the remainder of the County, where no voluntary care committees have been established (at present comprising a population of 1,073,198) the work is done through the dispensary organisation under the direction of the Central Tuberculosis Officer, based on instruction from the County Tuberculosis Committee.

(c) Encouragement and assistance, as heretofore, will be given to the formation of new voluntary care committees, and from time to time as committees are approved they will assume responsibility for the care work in their particular districts in succession to the dispensary organisations.

Before 1924, no money from the tuberculosis funds of the County Council was available for care work in the areas where there were no voluntary care committees.

The principle underlying the method of allocating grants for care work is that proportionately the same amount of money from the tuberculosis funds is available for the whole County whether covered by voluntary care committees or not. This ensures, also, that the voluntary committees have the benefit of all moneys collected by them from other sources. The matter may be pictured more clearly by taking two towns, say, “A” with a care committee who spend £100 per annum (£50 raised locally and £50 granted from the County Council), against “B,” without a care committee, for whose patients £50 is granted from the County Council.

Enquiry is often made as to the difference in benefit which a patient would receive if dealt with by a voluntary care committee as against the dispensary organisation : do the patients in town “B” suffer through the lack of voluntary funds ? The following statement has been prepared to answer the question :—

Voluntary care committee.

Through having larger funds care committees can be more generous.

There is reluctance to refer cases to Public Assistance Committee or Unemployment Assistance Board unless they are likely to require substantial grants.

There is no restriction on the amount of help which care committees can give—it depends entirely on their resources.

Dispensary organisation.

The tuberculosis officers work to a family income scale.

The tuberculosis officers, to conserve their relatively small funds, refer cases more quickly to the Public Assistance Committee or Unemployment Assistance Board.

Where patients are already in receipt of relief, the tuberculosis officer recommends the Public Assistance Committee or Unemployment Assistance Board to make a grant for extra food.

The care committees enjoy almost complete autonomy ; in fact, the only conditions of recognition of a voluntary committee are that they appoint the consultant tuberculosis officer of the area as medical adviser, issue an annual report and balance sheet, and do not solicit funds from another local authority or other committee of the County Council.

For most of the care committees, the tuberculosis health visitor or the dispensary clerk is the honorary secretary or assistant honorary secretary.

The annual reports and balance sheets of the various committees are considered by the County Tuberculosis Committee, who have expressed their appreciation of the helpful voluntary work carried out.

The accounts of the care committees are subject only to audit by each care committee's own appointed auditor. On the other hand, the accounts of the dispensary organisation are subject to audit by the County Auditor and the Government District Auditor.

In addition to the annual grant of 50 per cent. of the care committees' expenditure on assistance to patients, the cost of all stationery, printing, advertising, postages, and clerical assistance is borne entirely by the County Tuberculosis Committee. This also applies, of course, to the care work done by the dispensary organisation.

OBJECTS OF CARE COMMITTEES AND CARE FUND.

The following are in general the objects for which the voluntary care committees may be said to stand :—

(1) To assist in the purchase of clothing which patients need when they go to a sanatorium or hospital.

(2) To provide food and clothes for poor patients who are receiving treatment at home.

(3) To give assistance (in kind) to dependants, so as to enable patients, for whom institutional treatment has been recommended, to take advantage of the opportunities provided under the County scheme.

(4) To assist patients, who are sufficiently recovered, to obtain suitable employment.

(5) To give suitable advice and encouragement to patients and their friends, and generally to assist the dispensary staff in the enlightenment of the public both as to the laws of health and the facilities for treatment.

In the areas without care committees the County Council have charged the tuberculosis dispensary staff with the duty of carrying out the relief work. Grants from the County care fund to necessitous patients or their dependants are made on the recommendation of the consultant tuberculosis officers, with the following general objects :—

(a) To assist in the purchase of clothing which patients need when they go to a sanatorium or hospital.

(b) To provide food and clothes for necessitous patients who are receiving treatment at home, and for those who have returned from an institution with no chance of resuming work.

(c) To give assistance (in kind) to dependants, so as to enable patients, for whom institutional treatment has been recommended, to take advantage of the opportunities provided under the County scheme.

VOLUNTARY CARE COMMITTEES.

A list of the existing voluntary care committees, the populations served, the number of patients assisted, and the amounts expended on assistance during 1937 are given in the following Table 38 :—

Name of committee.	Estimated population served 1937.	Number of patients assisted during 1937.	Expenditure on patients during 1937.
			£ s. d.
Ashton-under-Lyne and District	68,276	84	293 16 11
Chorley and District	72,630	57	258 2 9
Earlestown, Newton and District	22,776	12	14 6 1
Farnworth and District	67,984	28	80 10 10
Horwich	14,940	16	134 4 7
Huyton-with-Roby District	22,420	17	39 19 8
Lancaster and District	96,354	26	129 14 7
*Leigh and District	99,460	109	168 0 7
Prescot and District	23,092	12	71 15 2
Prestwich	31,710	4	19 1 8
†Radcliffe, Whitefield and District Relief Fund for Consumptives	39,140	22	68 18 11
Stretford Civic Guild of Help	59,690	63	78 10 6
Westhoughton	15,110	10	29 8 2
Widnes	43,140	50	102 8 3
‡Wigan County District	109,280	51	90 14 11
Total	786,002	561	£1,579 13 7

*In September, 1937, the Golborne Care Committee was merged in the Leigh and District Committee, and the information given in the above table relates to the combined committee.

†Relates to year ended 31st March, 1938.

‡Ceased to operate as a voluntary care committee 31st March, 1938.

COUNTY CARE FUND.

The following Table 39 shows the position of the remainder of the dispensary areas not covered by voluntary care committees and the amount of the grants, calculated on population, made by the County Tuberculosis Committee :—

Dispensary area.	Estimated population 1937.	Total population covered by care committees 1937.	Balance of population to come under dispensary organisation 1937.	Amount of grant available for area not covered by care committees.
No. 1	255,424	183,924	71,500	£ 63
No. 2	321,996	—	321,996	296
No. 3	379,773	139,126	240,647	215
No. 4	369,354	242,244	127,110	113
No. 5	296,531	111,428	185,103	162
Furness	38,034	—	38,034	34
Fylde	88,808	—	88,808	80
Wigan County	109,280	109,280	—	—
Total	1,859,200	786,002	1,073,198	£963

Any grant made by the tuberculosis officer to a tuberculous patient is reported to the local Guardians Committee of the Public Assistance Committee if the patient or family are already receiving relief from the Public Assistance Committee.

During 1937, assistance (mainly in the provision of milk, groceries, and clothing) was afforded through the dispensary staff to 228 individual patients, the amount expended being £765 18s. 3d.

CO-OPERATION WITH OTHER BODIES.

To prevent overlapping between the County Tuberculosis Committee and the Public Assistance Committee in the granting of relief to necessitous persons, the consultant tuberculosis officer of each dispensary area is authorised to co-operate with the officials of the Guardians Committees by making recommendations direct concerning each necessitous or destitute tuberculous patient and any dependants in need of assistance which cannot be, or is deemed inadvisable to be, provided or arranged for by the tuberculosis care organisation.

The Unemployment Assistance Board are responsible for assisting able-bodied unemployed persons formerly dealt with by the Public Assistance Committee, and their machinery of administration is now operating freely. Here again, co-operation takes place between the consultant tuberculosis officers of the dispensary areas and the area officers of the Board.

Assistance is given by the Public Assistance Committee in kind and by the Unemployment Assistance Board in money.

VISITS BY VOLUNTARY CARE COMMITTEES.

The following visits of voluntary care committees to County sanatoria and hospitals have taken place :—

Widnes Care Committee	...	Rufford Pulmonary Hospital	25th May, 1937.
Ashton-under-Lyne and District Care Committee	.....	Wrightington Hospital	 10th May, 1938.
Horwich Care Committee	..	Elswick Sanatorium	 11th June, 1938.

The County Tuberculosis Committee encourage these visits as they enable the members of the care committees to see at first hand the institutional side of the scheme.

XXVI.—DENTAL TREATMENT.

Patients eligible for dental treatment are those who, in the opinion of the medical superintendent or the tuberculosis officer, are unable to derive full benefit from their treatment for tuberculosis owing to defective teeth. Patients already covered by dental schemes of other bodies, *e.g.*, school children at home and tuberculous pensioners, are excluded from benefit. For insured persons who are tuberculous many approved societies make a contribution towards the cost of dental attention required.

At the following County sanatoria and hospital the dental work is carried out by a visiting dentist :—High Carley, Oubas House, Elswick, and Wrightington. At the other County institutions, *e.g.*, Chadderton, Heath Charnock, Lancaster, Peel Hall, Withnell, and Wolstenholme Pulmonary Hospitals, a local dentist is called upon to visit as and when required.

The statement below shows the dental work carried out during 1937, under the scheme approved by the County Council :—

TABLE 40.

Institution.	Number of individual patients who received dental attention.	New dentures provided.		Repairs to dentures.	Ex-tractions.	Fill-ings.	Scalings and clean-ings.	Other opera-tions.	Inspec-tions.
		Com-plete sets.	Partial sets.						
High Carley	116	11	9	7	276	21	308	112	151
Oubas House (Child- ren)	14	—	—	—	11	2	—	—	3
Elswick	69	5	6	2	130	13	80	55	219
Wrightington	154	23	5	9	592	18	267	94	554
Other sanatoria and hospitals	145	10	8	8	390	18	8	25	78
Dispensary patients	45	28	7	9	436	4	2	—	—
Total	543	77	35	35	1,835	76	665	286	1,005

The dental scheme, considering the benefit derived by the patients, has proved economical, and continues to be justified.

XXVII.—INSTITUTIONAL ACCOMMODATION.

On the 31st December, 1937, there were 932 beds at sanatoria and hospitals occupied by County patients, as compared with 944 at the end of 1936. The number of beds occupied by pulmonary cases worked out at 78 per 100 pulmonary deaths; for non-pulmonary tuberculosis the proportion was 127 beds per 100 non-pulmonary deaths.

Table 41 below gives a summary of the beds occupied at the end of 1937 at the several types of institutions, the names of which are contained in Appendix XI :—

Type of institution.	Pulmonary tuberculosis.		Non-pulmonary tuberculosis.		Total.
	Adults.	Children.	Adults.	Children.	
Institutions for pulmonary tuberculosis	602	35	1	3	641
Training colonies	7	—	3	—	10
Institution with accommodation for combined tuberculosis	17	1	—	—	18
Beds occupied by observation cases	9	9	6	5	29
Institutions for non-pulmonary tuberculosis	—	—	104	130	234
Total	635	45	114	138	932
	680		252		

The number of beds occupied fluctuates during the course of the year, there being a greater demand for beds in the summer than in the winter. In July, 1937, the beds occupied totalled 988, and in July, 1938, 976,

The number of beds in occupation by County patients on the 31st December of each year was as follows :—1926, 825; 1927, 819; 1928, 858; 1929, 874; 1930, 906; 1931, 875; 1932, 931; 1933, 875; 1934, 911; 1935, 914; 1936, 944; and 1937, 932.

Of the 932 beds occupied, 696 were in sanatoria or hospitals belonging to the County Council, and 236 were in non-County institutions.

Of the 680 beds occupied by pulmonary patients, 79 per cent. of the cases were classified as “ T.B. plus,” that is, sometime during treatment their sputum was positive.

The number of patients waiting for institutional treatment, averaged at monthly periods during 1937, was as follows :—

	Adults.	Children.
Sanatoria	25	1
Pulmonary hospitals	20	—
General hospitals	6	2
Special hospitals	15	9

A return was obtained from the medical superintendents of Public Assistance hospitals of the number of patients suffering from tuberculosis chargeable to the Lancashire County Council who were in such hospitals on the 31st December, 1937. The following statement has been prepared from the returns so furnished :—

TABLE 42.

	Patients in Public Assistance hospitals on 31st December, 1937.			
	Adult males.	Adult females.	Children.	Total.
Pulmonary tuberculosis	10	7	—	17
Non-pulmonary tuberculosis	5	6	5	16

The foregoing total of 33 cases (compared with 35 at end of 1936) in Public Assistance hospitals contains those tuberculous patients whose mental condition, or other complication, does not permit of their being treated in sanatoria and hospitals. Every effort is made to transfer as soon as possible patients who require special treatment for tuberculosis to the sanatoria and hospitals provided for such treatment.

Further particulars of the residential treatment for tuberculous patients in Public Assistance hospitals are given in Appendix VII.

XXVIII.—TREATMENT, OCCUPATIONAL TRAINING, AND VILLAGE SETTLEMENTS.

A complete tuberculosis scheme has facilities for sending carefully selected patients to village settlements where they can undergo a probationary period of treatment combined with training to fit them to live with their families in cottages forming part of the village settlement, or, if single, to enter the hostel in such settlement. The main factors to be considered when making the selection are : The inadvisability of the patient returning to his normal occupation, the unsuitability of the home circumstances of the patient, temperamental suitability, the medical condition, age of the patient, and the likelihood of the patient and family to become successful settlers.

So far, the principal village settlements established in England are : Papworth Village Settlement, Cambridge (Medical Director, Sir Pendrill Varrier-Jones) ; British Legion Village, Preston Hall, Aylesford, Kent (Medical Director, Dr. J. B. McDougall) ; Barrowmore Tuberculosis Sanatorium and Settlement, Great Barrow, Chester (established and administered by the Order of St. John and the British Red Cross Society —Medical Director, Dr. E. L. Sandiland).

Arrangements exist for County patients to be sent to each of these settlements upon agreed terms, and the following statement shows the number entering the settlements and the number who still remain :—

TABLE 43.

Name of settlement.	Number of patients who entered the settlement to 31-12-37.	Number of patients who left the settlement.	Number of patients who died in the settlement.	Number of patients in the settlement on 31-12-37.
Papworth Village Settlement	2	—	2	—
British Legion Village	4	1	1	2
Barrowmore Tuberculosis Sanatorium and Settlement	23	6	7	10

A village settlement with its associated workshops, seeking orders in the open market at competitive rates, makes this aspect of a settlement similar to a large business with consequent commercial risks. It is generally agreed that local authorities, owing to methods of public finance, to mention but one factor, are unable themselves to manage village settlements, hence co-operation with settlements under the control of voluntary bodies is advisable.

On the 1st July, 1936, revised arrangements with the Committee of the Barrowmore Tuberculosis Sanatorium and Settlement were adopted concerning the admission of County patients to the sanatorium, industries, and settlement.

The arrangements embrace the following conditions :—

SANATORIUM SECTION.—The maintenance charge to accord with the annual return to the Ministry of Health.

INDUSTRIES.—Patients and potential settlers of commercial value in the industries to be charged for at a lower maintenance rate.

SETTLEMENT.—Payment at a flat rate (£1 per week for married men and 10s. per week for unmarried men) for a period of five years, with the proviso that any patient relapsing and re-entering the sanatorium section should be paid for at the maintenance rate applicable to sanatorium patients. The return to the normal population of patients who have recovered from tuberculosis, including the possibility of a rehabilitation grant by the County Council to any recovered patient leaving the settlement.

Although settlement facilities are important in a tuberculosis scheme, the proportion of patients dealt with is very small. At the most it can be said that the proportion of sanatorium patients suitable for settlement will not exceed 5 per cent.

Experience shows that many patients are disinclined to leave the locality in which their homes are situated to enter with their families a village settlement many miles away.

In addition to patients who receive training in a workshop preparatory to entering a settlement and to those who receive treatment and undertake work as occupational therapy, arrangements exist for suitable patients, both pulmonary and non-pulmonary, to receive training in a definite occupation in order to fit them to return to useful employment. Patients sent for such training combined with treatment are youths who have had little or no employment and who require occupational training under sanatorium conditions. The following statement shows the number of patients who have been afforded training combined with treatment :—

TABLE 44.

Name of institution.	Number of patients admitted to 31-12-37.	Patients discharged.		Number of patients undergoing training on 31-12-37.
		Training completed.	Training terminated before completion of course.	
Burrow Hill Sanatorium Colony	11	4	6	1
Derwen Cripples' Training College	11	5	4	2
St. Vincent's Orthopaedic Hospital	2	1	1	—

Here again every care has to be taken in selecting patients to undergo training, as much public money can be expended in attempting to train persons who prove to be unsuitable.

HANDICRAFTS.

At the Wrightington Hospital, children and adults are trained in handicrafts by the teachers and the instructresses. When the adult patients return to their homes, it is known that a number of them continue the work they have learnt and are able to sell the articles they have made. The medical superintendent of the Wrightington Hospital reports that ex-patients are known to be benefiting by the handicrafts taught at the hospital. The following are the subjects in which instruction is given: Women—making of artificial flowers and jewellery, needlework, embroidery, hand-painted glass, decorated earthenware jugs, knitted toys, and leather work; men—french polishing, stool seating, poker work, leather work, jewellery, and making door mats. Thus, the handwork which the patients learn at Wrightington is definitely worth while, both from the point of view of occupying them during their treatment and also as a means of supplementing their income after discharge.

XXIX.—HOME TREATMENT AND DISPENSARY TREATMENT OR SUPERVISION.

All notified cases of tuberculosis while at home are under the supervision of the tuberculosis officers and tuberculosis health visitors, in addition to the treatment that may be obtained from their medical attendants. Ordinary medical treatment at dispensaries (as distinct from special treatment such as artificial light and artificial pneumothorax) has never been undertaken, unless the patient has no doctor. The number of consultations with medical practitioners in 1937 was as follows :—Personal, 592 ; otherwise, 6,822 ; total, 7,414.

APPENDIX 1.

DEATH-RATES for 1937 from tuberculosis in 109 urban and rural districts in Lancashire, and in the 8 County dispensary areas.

County district.	Estimated population, 1937.	Pulmonary tuberculosis.			Non-pulmonary tuberculosis.	
		Number of deaths, 1937.	Death-rate per 1,000 of population, 1937.	Average death-rate 5 years, 1932-36.	Number of deaths, 1937.	Death-rate per 1,000 of population, 1937.
URBAN.						
Abram.....	6,307	2	0.31	0.50	1	0.15
Accrington (B)	39,860	33	0.82	0.44	4	0.10
Adlington	4,032	1	0.24	0.52	1	0.24
Ashton-in-Makerfield	19,620	7	0.35	0.38	8	0.40
Ashton-under-Lyne (B)	48,810	46	0.94	0.59	5	0.10
Aspull	6,628	1	0.15	0.63	2	0.30
Atherton	20,620	6	0.29	0.40	4	0.19
Audenshaw.....	11,460	5	0.43	0.51	—	—
Bacup (B)	19,760	16	0.80	0.53	1	0.05
Barrowford.....	4,960	—	—	0.27	1	0.20
Billinge and Winstanley	5,632	4	0.71	0.45	—	—
Blackrod	3,284	1	0.30	0.33	2	0.60
Brierfield	7,257	4	0.55	0.60	2	0.27
Carnforth	3,123	3	0.96	0.42	1	0.32
Chadderton	29,510	10	0.33	0.51	3	0.10
Chorley (B)	29,830	9	0.30	0.40	3	0.10
Church	5,564	2	0.35	0.59	—	—
Clayton-le-Moors	7,162	2	0.27	0.23	1	0.13
Clitheroe (B)	11,300	1	0.08	0.45	—	—
Colne (B)	22,170	13	0.58	0.65	—	—
Crompton	13,430	8	0.59	0.52	—	—
*Crosby (B)	55,580	35	0.62	0.68	8	0.14
Dalton-in-Furness	10,380	1	0.09	0.63	3	0.28
Darwen (B)	32,280	15	0.46	0.36	2	0.06
Denton	21,090	9	0.42	0.52	—	—
Droylsden	21,490	13	0.60	0.64	3	0.13
Eccles (B)	42,560	23	0.54	0.52	5	0.11
Failsworth	17,370	10	0.57	0.69	2	0.11
Farnworth	27,920	13	0.46	0.42	5	0.17
Fleetwood (B)	24,330	9	0.36	0.59	1	0.04
Formby	8,529	4	0.46	0.63	—	—
Fulwood	10,690	2	0.18	0.17	—	—
Golborne	14,000	5	0.35	0.58	1	0.07
Grange-over-Sands	2,365	2	0.84	0.67	—	—
Great Harwood	11,150	5	0.44	0.35	—	—
Haslingden (B)	15,400	2	0.12	0.44	—	—
Haydock	10,750	6	0.55	0.43	1	0.09
Heywood (B)	25,400	9	0.35	0.62	3	0.11
Hindley	20,440	8	0.39	0.71	—	—
Horwich	14,940	6	0.40	0.36	—	—
Huyton-with-Roby	22,420	13	0.57	0.48	6	0.26
Ince-in-Makerfield.....	20,960	14	0.66	0.67	4	0.19
Irlam	14,360	7	0.48	0.65	1	0.06
Kearsley	10,750	4	0.37	0.38	2	0.18
Kirkham	4,173	1	0.23	0.43	3	0.71
Lancaster (B).....	47,220	22	0.46	0.50	5	0.10
Lees	4,273	2	0.46	0.44	—	—
Leigh (B)	46,100	24	0.52	0.48	2	0.04
Leyland	11,860	3	0.25	0.42	2	0.16
Litherland	18,860	18	0.95	0.98	3	0.15
Littleborough.....	11,230	5	0.44	0.33	1	0.08
Little Lever	4,814	3	0.62	0.52	1	0.20
Longridge	3,991	1	0.25	0.68	—	—
Lytham St. Annes (B)	25,280	7	0.27	0.42	—	—
Middleton (B)	29,040	3	0.27	0.55	1	0.03
Milnrow	8,058	5	0.62	0.32	1	0.12
Morecambe and Heysham (B).....	29,840	12	0.40	0.45	1	0.03
Mossley (B)	11,030	7	0.63	0.47	2	0.18
Nelson (B)	35,670	14	0.39	0.48	3	0.08
Newton-in-Makerfield	20,520	10	0.48	0.59	2	0.09

*The Borough of Crosby was formed on the 1st November, 1937, by the amalgamation of the Urban Districts of Great Crosby and Waterloo-with-Seaforth.

APPENDIX II. TABLE B.

SUMMARY OF THE NOTIFICATIONS OF TUBERCULOSIS RECEIVED IN THE ADMINISTRATIVE COUNTY DURING THE YEAR 1937.

(Extracted from Weekly Returns of District Medical Officers of Health).

NOTIFICATIONS ON SCHEDULE A—Excluding Duplicates.																																											
PULMONARY TUBERCULOSIS.						NON-PULMONARY TUBERCULOSIS.																																					
Lungs only.	Lungs and Larynx.	Larynx.	Bronchial Glands.	Mediastinal Glands.	TOTAL	BONES AND JOINTS.																		ABDOMINAL			GENITO-URINARY										MISCELLANEOUS.	TOTAL	GRAND TOTAL	Total Notifications, (i.e., including cases previously notified by other doctors).			
						Head (including Middle Ear).	Trunk		Arm					Leg					Two or more different joints.	Not classified.	Intestines.	Peritoneum.	Mesenteric Glands.	Bladder.	Fallopian Tube.	Kidney.	Prostate.	Suprarenal.	Testicle and Epididymis.	Not classified (two or more).	MENINGITIS (Brain).	MILIARY (Generalised).	SKIN (Lupus).	PERIPHERAL GLANDS									
Ribs and Sternum.	Spine.	Shoulder.	Scapula.	Humerus.	Elbow.	Radius.	Ulna.	Hand and Wrist.	Hip and Pelvis.	Femur.	Knee.	Tibia.	Fibula.	Foot and Ankle.	Axillary.	Cervical.	Inguinal.																										
Quarter ended 31st March, 1937.....	307	4	3	1	315		2	15	1			2			3	12		3			3	1		1	14	3			3			2	2	16	1	6	2	83		4	179	494	573
Quarter ended 30th June, 1937	389		2	1	393		1	10	1	1		1	1		2	10		7		1	6	2		1	23	4		1	8			3	2	9		7		118	1	2	222	615	676
Quarter ended 30th September, 1937	330	2			332			15	1						3	9		4	1		3	1	1	3	16	2	1		4			2	1	6	1	9		96		4	183	515	567
Quarter ended 31st December, 1937	270	3	1		274			8							3	13		2			2	1		2	16	5	2	1	3			1	2	8		9	1	79	1	2	161	435	505
Total	1296	9	6	2	*1314		3	48	3	1		3	1		11	44		16	1	1	14	5	1	7	69	14	3	2	18			8	7	39	2	31	3	376	2	12	*745	*2,059	2,321

NOTIFICATIONS ON SCHEDULE A—Excluding Duplicates.																														
PULMONARY TUBERCULOSIS.														NON-PULMONARY TUBERCULOSIS.														GRAND TOTAL.		
SEX	AGE-GROUP—YEARS.												TOTAL	TOTAL M. & F.	AGE-GROUP—YEARS.												TOTAL		TOTAL M. & F.	
	0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and over	0 to 1			1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and over						
Quarter ended 31st March, 1937	M. F.	2 1	..... .....	5 4	12 18	17 27	41 42	46 19	29 13	26 7	3 3	181 134	}	315	2 2	16 11	19 22	14 12	12 8	4 8	5 12	6 5	6 4	5 2	 1	89 90	}	179	494	
Quarter ended 30th June, 1937	M. F.	 1	 3	7 5	1 27	14 39	30 58	44 21	41 21	35 12	24 5	201 192	}	393	1 2	13 14	32 20	13 14	24 16	5 19	9 16	5 12	1 2	2	107 115	}	222	615		
Quarter ended 30th September, 1937	M. F.	1	 2	3 2	4 2	15 24	25 43	48 27	24 14	22 15	3 3	170 162	}	332	1	19 10	19 12	11 12	8 8	9 18	7 21	 5	5 7	5 4	2	86 97	}	183	515	
Quarter ended 31st December, 1937	M. F.	..... .....	..... 1	4 4	12 17	15 23	31 44	33 14	33 3	28 5	4 2	161 113	}	274	 1	12 12	25 19	3 15	15 5	6 5	5 13	1 8	5 5	1 3	 2	73 88	}	161	435	
Total	M.	1	2	11	12	53	87	164	147	121	100	15	713	}	1,314*	4	60	95	41	59	24	26	12	17	13	4	355	}	745*	2,059*
	F.	.....	2	6	17	86	117	189	81	51	39	13	601			5	47	73	53	37	50	62	33	18	9	3	390			

* Corrected figures after deducting 43 pulmonary and 56 non-pulmonary cases notified in error by practitioners.

APPENDIX II. TABLE C.

ANALYSIS OF THE NOTIFICATIONS OF TUBERCULOSIS RECEIVED IN THE ADMINISTRATIVE COUNTY DURING THE YEAR 1937.

(Extracted from Weekly Returns of District Medical Officers of Health).

NOTIFICATIONS ON SCHEDULE A—Excluding Duplicates.

[illegible]

* Combined cases are included in the pulmonary total, but are shown separately for purpose of reference.

† Corrected figures after deducting 43 pulmonary and 56 non-pulmonary cases notified in error by practitioners.

APPENDIX II. TABLE D.

MALE AND FEMALE NOTIFIED CASES IN THE ADMINISTRATIVE COUNTY DURING THE YEARS 1917 TO 1937.

YEAR	SEX	PULMONARY TUBERCULOSIS.													NON-PULMONARY TUBERCULOSIS.													Total	Total* M. & F.
		0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and over	Total	Total* M. & F.	0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and over	Total	Total* M. & F.		
1917	M	4	20	77	62	113	104	262	268	190	90	30	1,220	2,375	21	116	109	105	61	23	42	30	8	9	1	525	1,062		
	F	2	22	90	100	129	155	296	185	107	50	19	1,115		7	79	97	98	89	59	49	25	23	6	5	537			
1918	M	3	35	55	59	140	108	300	317	232	98	28	1,375	2,534	14	75	103	65	60	19	29	16	14	7	2	404	885		
	F	1	24	69	74	139	166	297	207	117	52	13	1,159		10	75	84	92	80	46	46	29	9	6	4	481			
1919	M	2	22	53	55	94	107	238	212	165	91	17	1,056	2,105	13	50	97	80	53	26	31	22	19	12	4	407	847		
	F	5	14	54	80	126	161	261	184	99	41	24	1,049		10	59	98	76	61	43	41	29	11	7	5	440			
1920	M	2	24	56	63	94	120	281	249	160	90	14	1,153	2,084	31	62	107	108	68	26	35	23	16	11	5	492	968		
	F	2	20	53	71	115	122	264	147	84	36	17	931		12	66	86	78	62	46	52	34	23	16	1	476			
1921	M	1	17	43	47	94	133	222	225	162	84	19	1,047	2,044	12	60	110	84	53	32	41	23	17	6	4	442	899		
	F		12	53	77	132	160	255	156	82	50	20	997		15	62	89	81	65	41	53	15	21	9	6	457			
1922	M	3	16	38	47	83	120	227	190	148	99	27	998	1,863	18	101	111	79	55	37	39	22	13	7	3	485	956		
	F	4	15	45	57	135	135	202	146	61	42	23	865		13	77	80	95	61	45	50	24	14	7	5	471			
1923	M	2	10	41	43	82	132	236	207	147	94	13	1,007	1,937	18	115	134	105	75	35	45	22	14	15	6	584	1,188		
	F	1	14	43	60	115	149	251	149	83	49	16	930		14	103	110	107	68	60	64	31	28	14	5	604			
1924	M		27	37	52	105	110	203	199	197	97	18	1,045	1,972	19	123	92	92	95	35	43	25	17	12	3	556	1,120		
	F	3	12	29	55	144	139	223	169	94	49	10	927		6	99	87	94	80	55	72	30	17	11	13	564			
1925	M		22	32	38	81	115	212	200	192	74	24	990	1,846	17	108	106	73	58	37	53	26	15	12	5	510	1,027		
	F	3	10	24	44	144	153	198	136	85	34	25	856		9	86	84	91	82	41	57	33	18	10	6	517			
1926	M	1	9	27	40	91	113	210	198	158	110	23	980	1,828	10	90	97	76	75	29	35	32	16	7	3	470	953		
	F	2	12	41	47	114	169	224	120	68	38	13	848		19	83	94	51	67	56	51	34	17	6	5	483			
1927	M	1	11	47	39	115	111	197	187	185	85	19	997	1,794	12	101	131	87	66	38	40	18	13	4	7	517	1,045		
	F		13	37	49	129	128	195	113	71	51	11	797		15	84	95	81	61	47	75	33	20	11	6	528			
1928	M	1	7	31	20	70	106	187	163	176	82	27	870	1,660	16	82	114	66	67	43	40	15	14	10	7	474	956		
	F		6	33	32	126	147	195	125	62	44	20	790		13	69	100	70	56	63	50	27	21	8	5	482			
1929	M	4	7	32	17	80	99	160	180	165	76	23	843	1,517	17	98	99	67	52	37	40	22	16	7	5	460	913		
	F		7	18	23	111	130	186	99	53	28	19	674		3	65	92	51	54	48	63	36	22	15	4	453			
1930	M	1	5	14	27	66	106	189	174	159	82	22	845	1,527	6	78	105	69	67	28	45	18	12	12	7	447	982		
	F		3	13	29	104	122	186	107	61	37	20	682		12	67	100	80	63	63	71	35	28	13	3	535			
1931	M	2	8	15	18	75	118	153	159	161	89	25	823	1,460	13	67	78	63	63	34	40	15	20	10	7	410	862		
	F		7	10	27	99	120	149	109	57	38	21	637		8	55	77	62	69	55	55	37	16	12	6	452			
1932	M	1	2	14	20	73	105	183	146	142	108	20	814	1,477	7	67	70	54	38	41	34	20	22	17	6	376	825		
	F		3	19	33	97	146	160	92	58	41	14	663		7	43	86	70	63	53	63	24	19	15	6	449			
1933	M	2	4	10	19	70	84	186	171	155	85	27	813	1,453	10	94	76	41	36	34	41	23	10	13	5	383	780		
	F		4	10	20	85	101	201	102	61	29	21	640		1	65	69	70	40	37	60	32	9	6	8	397			
1934	M	1	3	4	8	47	99	161	156	139	73	25	716	1,315	10	60	79	61	36	22	43	19	18	7	5	360	774		
	F	2	9	11	14	84	135	163	87	50	33	11	599		12	46	69	6	63	36	65	32	15	6	5	414			
1935	M		6	8	14	61	97	152	145	122	81	34	720	1,305	4	59	62	52	8	31	30	24	14	11	4	329	672		
	F		6	6	21	59	121	177	91	52	45	7	585		6	54	57	44	52	42	47	20	7	7	7	343			
1936	M		2	12	10	51	79	143	130	150	96	21	694	1,248	4	87	86	60	32	34	33	14	9	10	9	378	722		
	F		4	5	20	74	120	154	81	45	24	21	554		4	50	54	55	35	37	55	22	16	9	7	344			
1937	M	1	2	11	12	53	87	164	147	121	100	15	713	1,314	4	60	95	41	59	24	26	12	17	13	4	355	745		
	F		2	6	17	86	117	189	81	51	39	13	601		5	47	73	53	37	50	62	33	18	9	3	390			

* Corrected figures from 1922 after deducting the following cases found to be non-tuberculous and notifications cancelled:—1922: 14 pulmonary, 12 non-pulmonary; 1923: 33 pulmonary, 31 non-pulmonary; 1924: 57 pulmonary, 28 non-pulmonary; 1925: 83 pulmonary, 49 non-pulmonary; 1926: 61 pulmonary, 41 non-pulmonary; 1927: 68 pulmonary, 51 non-pulmonary; 1928: 63 pulmonary, 52 non-pulmonary; 1929: 61 pulmonary, 44 non-pulmonary; 1930: 63 pulmonary, 55 non-pulmonary; 1931: 38 pulmonary, 49 non-pulmonary; 1932: 40 pulmonary, 45 non-pulmonary; 1933: 48 pulmonary, 51 non-pulmonary; 1934: 38 pulmonary, 51 non-pulmonary; 1935: 48 pulmonary, 40 non-pulmonary; 1936: 44 pulmonary, 29 non-pulmonary; and 1937: 43 pulmonary, 56 non-pulmonary.

APPENDIX I (contd.).

County district.	Estimated population, 1937.	Pulmonary tuberculosis.			Non-pulmonary tuberculosis.	
		Number of deaths, 1937.	Death-rate per 1,000 of population, 1937.	Average death-rate 5 years, 1932-36.	Number of deaths, 1937.	Death-rate per 1,000 of population, 1937.
URBAN—continued.						
Ormskirk	18,300	6	0·32	0·49	—	—
Orrell	8,349	1	0·11	0·44	1	0·11
Oswaldtwistle	12,720	10	0·78	0·46	—	—
Padiham	10,610	11	1·03	0·61	3	0·28
Poulton-le-Fylde	6,113	4	0·65	0·29	1	0·16
Freesall	2,027	—	—	0·19	—	—
Prescot	11,450	2	0·17	0·40	—	—
Prestwich	31,710	12	0·37	0·48	3	0·09
Radcliffe (B)	27,100	12	0·44	0·57	3	0·11
Rainford	3,635	—	—	0·38	—	—
Ramsbottom	15,030	5	0·33	0·61	2	0·13
Rawtenstall (B)	27,300	14	0·51	0·45	3	0·10
Rishton	5,937	2	0·33	0·53	—	—
Royton	15,650	12	0·76	0·58	2	0·12
Skelmersdale	6,177	3	0·48	0·42	—	—
Standish-with-Langtree	8,169	3	0·36	0·36	—	—
Stretford (B)	59,690	40	0·67	0·55	5	0·08
Swinton and Pendlebury (B)	39,690	14	0·35	0·49	6	0·15
Thornton Cleveleys	12,490	3	0·24	0·66	3	0·24
Tottington	6,122	—	—	0·38	—	—
Trawden	2,322	1	0·43	0·32	—	—
Turton	11,260	2	0·17	0·48	2	0·17
Tyldesley	18,740	10	0·53	0·57	2	0·10
Ulverston	9,299	4	0·43	0·36	—	—
Upholland	6,026	4	0·66	0·54	—	—
Urmston	30,500	15	0·49	0·35	5	0·16
Walton-le-Dale	13,360	5	0·37	0·48	1	0·07
Wardle	4,299	2	0·46	0·36	1	0·23
Westhoughton	15,110	4	0·26	0·37	2	0·13
Whitefield	12,040	7	0·58	0·40	1	0·08
Whitworth	7,625	1	0·13	0·66	—	—
Widnes (B)	43,140	30	0·69	0·71	7	0·16
Withnell	2,778	—	—	0·68	—	—
Worsley	24,500	12	0·48	0·42	2	0·08
Total Urban	1,616,700	782	0·48	0·51	168	0·10
RURAL.						
Blackburn	12,600	7	0·55	0·30	3	0·23
Burnley	17,720	10	0·56	0·50	4	0·22
Chorley	24,130	2	0·08	0·29	4	0·16
Clitheroe	8,994	3	0·33	0·17	1	0·11
Fylde	9,460	5	0·52	0·55	3	0·31
Garstang	11,750	3	0·25	0·23	1	0·08
Lancaster	9,842	7	0·71	0·51	—	—
Limehurst	8,006	2	0·24	0·51	2	0·24
Lunesdale	6,329	—	—	0·21	—	—
Preston	33,360	11	0·32	0·31	5	0·14
Ulverston	15,990	7	0·43	0·36	1	0·06
Warrington	19,500	9	0·46	0·29	1	0·05
West Lancashire	32,350	13	0·40	0·35	1	0·03
Whiston	25,320	1	0·03	0·33	3	0·11
Wigan	7,149	3	0·41	0·51	1	0·13
Total Rural	242,500	83	0·34	0·35	30	0·12
Total for Administrative County	1,859,200	865	0·46	0·49	198	0·10
DISPENSARY AREAS.						
No. 1	255,424	88	0·33	0·40	26	0·09
No. 2	321,996	167	0·51	0·45	30	0·09
No. 3	379,773	190	0·50	0·54	35	0·09
No. 4	369,354	180	0·48	0·48	43	0·11
No. 5	296,531	150	0·50	0·56	32	0·10
Furness	38,034	14	0·36	0·45	4	0·10
Fylde	88,808	29	0·34	0·50	11	0·13
Wigan County	109,280	47	0·43	0·55	17	0·15

APPENDIX III.

CENSUS OF TUBERCULOUS CASES on the dispensary registers on the 31st December, 1937 (inclusive of 932 patients in sanatoria and hospitals).

Dispensary area.	Sex	Number of cases under supervision on 31-12-37.							Number of doubtful cases on 31-12-37
		Pulmonary tuberculosis.		Non-pulmonary tuberculosis.		Total.	Number of cases per 1,000 of population.		
		Under 15 years of age.	15 years and over.	Under 15 years of age.	15 years and over.		Pul- monary.	Non- pulm'ry.	
No. 1	M. F.	12 7	200 195	120 89	110 158	891	1·62	1·86	10
No. 2	M. F.	4 11	294 256	86 83	119 152	1,005	1·75	1·36	2
No. 3	M. F.	13 11	522 377	126 87	181 205	1,522	2·43	1·57	—
No. 4	M. F.	5 8	499 438	98 83	166 196	1,493	2·57	1·47	—
No. 5	M. F.	21 10	400 310	129 105	79 115	1,169	2·49	1·44	8
Furness	M. F.	9 11	79 68	11 20	30 34	262	4·39	2·49	4
Fylde	M. F.	3 3	110 97	51 44	30 49	387	2·39	1·95	4
Wigan County	M. F.	14 14	152 127	79 65	80 107	638	2·80	3·02	10
Total	M. F.	81 75	2,256 1,868	700 576	795 1,016	7,367	2·30	1·66	38
		4,280		3,087			3·96		

The populations of the dispensary areas were :—

Area No. 1	255,424	Area No. 2	321,996	Area No. 3	379,773	Area No. 4	369,354
Area No. 5	296,531	Furness	38,034	Fylde	88,808	Wigan County	109,280
Total for County.....				1,859,200			

APPENDIX III (contd.).

ANALYSIS OF CASES on the dispensary registers on the 31st December, 1937.

(a) PULMONARY TUBERCULOSIS.

Age-groups.	Sex.	T.B. minus.		T.B. plus 1.		T.B. plus 2.		T.B. plus 3.		TOTAL.	
		Active.	Quies.	Active.	Quies.	Active.	Quies.	Active.	Quies.	Active.	Quies.
0-5 years	M.	—	3	—	—	—	—	—	—	—	3
	F.	—	1	—	—	—	—	—	—	—	1
5-15 years	M.	27	46	2	1	2	—	—	—	31	47
	F.	19	36	4	1	10	—	4	—	37	37
15-25 years	M.	54	109	33	25	111	29	20	2	218	165
	F.	92	99	33	24	162	27	24	5	311	155
25-35 years	M.	52	91	42	46	213	81	22	5	329	223
	F.	82	114	65	47	246	74	19	4	412	239
35-45 years	M.	59	85	42	46	191	69	29	9	321	209
	F.	47	75	43	26	108	49	21	3	219	153
45-55 years	M.	54	81	33	37	164	38	22	—	273	156
	F.	26	54	13	19	54	40	11	2	104	115
55-65 years	M.	51	43	20	17	104	26	11	5	186	91
	F.	28	26	6	6	39	16	7	—	80	48
65 years and over	M.	19	15	3	3	29	10	4	2	55	30
	F.	5	7	3	1	9	4	3	—	20	12
All ages	M.	316	473	175	175	814	253	108	23	1,413	924
	F.	299	412	167	124	628	210	89	14	1,183	760
Grand Total		1,500		641		1,905		234		4,280	

(b) NON-PULMONARY TUBERCULOSIS.

Age-groups.	Sex.	Bones and joints (excluding spine).		Spine.		Abdomen.		Other organs.		Peri-pheral glands.		Skin.		TOTAL.	
		Act.	Quies.	Act.	Quies.	Act.	Quies.	Act.	Quies.	Act.	Quies.	Act.	Quies.	Act.	Quies.
0-5 years	M.	14	3	6	1	2	10	1	—	30	18	—	—	53	32
	F.	8	6	7	—	5	1	—	—	26	21	1	—	47	28
5-15 years	M.	65	54	22	19	12	39	—	1	127	262	6	8	232	383
	F.	32	38	16	22	12	31	1	4	102	229	8	6	171	330
15-25 years	M.	40	45	21	17	13	31	14	4	39	105	19	18	146	220
	F.	19	40	8	14	12	35	10	5	55	165	12	7	116	266
25-35 years	M.	15	33	12	12	5	9	15	10	19	37	17	4	83	105
	F.	16	21	13	18	12	15	16	21	32	86	40	16	129	177
35-45 years	M.	10	19	9	11	2	4	4	15	3	15	20	7	48	71
	F.	10	11	7	8	2	6	12	8	13	26	29	11	73	70
45-55 years	M.	10	11	5	5	2	1	4	5	2	3	7	2	30	27
	F.	8	8	8	5	3	5	3	6	10	14	22	6	54	44
55-65 years	M.	8	6	3	2	—	1	3	3	2	1	9	2	25	15
	F.	5	3	6	—	1	1	—	—	6	5	21	4	39	13
65 years & over	M.	8	5	2	—	—	—	3	1	2	1	3	—	18	7
	F.	7	3	2	2	—	2	1	—	3	2	12	1	25	10
All ages	M.	170	176	80	67	36	95	44	39	224	442	81	41	635	860
	F.	105	130	67	69	47	96	43	44	247	548	145	51	654	938
Grand Total		581		283		274		170		1,461		318		3,087	

APPENDIX IV.

HOUSING CONDITIONS of tuberculous patients in each dispensary area
at the end of 1937.

	Pulmonary cases considered infectious.		Pulmonary cases considered not infectious.		Non-pulmonary cases.	
	Under 15 years of age.	15 years and over.	Under 15 years of age.	15 years and over.	Under 15 years of age.	15 years and over.
Patients occupying a separate bedroom—						
Area No. 1	1	156	6	114	80	129
Area No. 2	—	137	2	109	25	81
Area No. 3	2	307	6	232	41	131
Area No. 4	3	308	2	356	54	132
Area No. 5	2	292	8	193	89	77
Furness Area	—	23	7	42	6	27
Fylde Area	—	43	2	64	14	32
Wigan County Area	1	72	3	55	14	44
Total	9	1,338	36	1,165	323	653
Patients occupying a separate bed but not a separate bedroom—						
Area No. 1	1	18	5	17	63	26
Area No. 2	3	131	5	66	76	60
Area No. 3	2	121	6	102	101	79
Area No. 4	1	43	4	75	58	47
Area No. 5	2	63	9	37	83	38
Furness Area	1	22	7	36	19	18
Fylde Area	—	19	3	33	37	15
Wigan County Area	1	41	15	49	74	55
Total	11	458	54	415	511	338
Patients not occupying a separate bed—						
Area No. 1	—	*	6	82	66	113
Area No. 2	—	15	5	92	68	130
Area No. 3	—	9	8	128	71	176
Area No. 4	—	7	3	148	69	183
Area No. 5	—	25	10	100	62	79
Furness Area	—	3	5	21	6	19
Fylde Area	—	—	1	48	44	32
Wigan County Area	—	—	8	62	56	88
Total	—	67	46	681	442	820
GRAND TOTAL	20	1,863	136	2,261	1,276	1,811

*Of the above adult infective patients without a separate bed at home, the following were in sanatoria or pulmonary hospitals at the end of 1937 :—

Area No. 1	1	Area No. 2	4	Area No. 3	1
Area No. 4	1	Area No. 5	3	Furness Area	1
Total		11			

APPENDIX V.

Return showing the WORK OF THE DISPENSARIES during the year 1937.

(Tables A and B of Memorandum 37/T (Revised) of the Ministry of Health).

DIAGNOSIS.	PULMONARY.				NON-PULMONARY.				TOTAL.				GRAND TOTAL.	
	Adults.		Children.		Adults.		Children.		Adults.		Children.			
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
A.—NEW CASES examined during the year (excluding contacts) :—														
(a) Definitely tuberculous	576	467	16	23	124	195	156	168	700	662	172	191	1,725	
(b) Diagnosis not completed	—	—	—	—	—	—	—	—	8	7	7	11	33	
(c) Non-tuberculous	—	—	—	—	—	—	—	—	1,235	1,213	332	261	3,041	
B.—CONTACTS examined during the year :—														
(a) Definitely tuberculous	4	14	1	8	1	2	6	3	5	16	7	11	39	
(b) Diagnosis not completed	—	—	—	—	—	—	—	—	—	—	2	3	5	
(c) Non-tuberculous	—	—	—	—	—	—	—	—	195	328	225	238	986	
C.—CASES written off the dispensary registers as :—														
(a) Recovered	109	86	1	7	141	212	90	79	250	298	91	86	725	
(b) Non - tuberculous (including any such cases previously diagnosed and entered on the dispensary registers as tuberculous)	—	—	—	—	—	—	—	—	1,441	1,554	561	503	4,059	
D.—NUMBER OF CASES on dispensary registers on 31st December, 1937 :—														
(a) Definitely tuberculous	2,256	1,868	81	75	795	1,016	700	576	3,051	2,884	781	651	7,367	
(b) Diagnosis not completed	—	—	—	—	—	—	—	—	8	7	9	14	38	

1. Number of cases on dispensary registers on 1st January, 1937	7,434	7. Number of consultations with medical practitioners :—	
2. Number of cases transferred from other areas and cases returned after discharge under Head 3 in previous years	303	(a) Personal	592
3. Number of cases transferred to other areas, cases not desiring further assistance under the tuberculosis scheme, and cases "lost sight of"	522	(b) Other	6,822
4. Cases written off during the year as dead (all causes)	855	8. Number of visits by tuberculosis officers to homes (including personal consultations)	4,627
5. Number of attendances at the dispensaries (including contacts)	25,707	9. Number of visits by nurses or health visitors to homes for dispensary purposes	41,491
6. Number of insured persons under domiciliary treatment on the 31st December, 1937	1,398	10. Number of :—	
		(a) Specimens of sputum, etc., examined	6,118
		(b) X-ray examinations made in connection with dispensary work	11,091
		11. Number of "recovered" cases restored to dispensary registers, and included in A(a) and A(b) above	57
		12. Number of "T.B. plus" cases on dispensary registers on 31st December, 1937	2,780

Number of dispensaries for the treatment of tuberculosis (excluding centres used only for special forms of treatment).

Provided by the Council 25

Provided by Voluntary Bodies Nil.

APPENDIX VI.

Return showing the extent of RESIDENTIAL TREATMENT AND OBSERVATION during the year 1937 in institutions (other than Poor Law institutions) approved for the treatment of tuberculosis.

(Table D of Memorandum 37/T (Revised) of the Ministry of Health).

		In institu- tions on Jan. 1st.	Admitted during the year.	Discharged during the year.	Died in the institu- tions.	In institu- tions on Dec. 31st.
Number of doubtfully tubercu- lous cases admitted for obser- vation	Adult M.	6	63	59	2	8
	Adult F.	5	35	31	2	7
	Children	10	42	36	2	14
	Total	21	140	126	6	29
Number of patients suffering from pulmonary tuberculosis	Adult M.	329	675	535	139	330
	Adult F.	309	556	451	118	296
	Children	39	42	42	3	36
	Total	677	1,273	1,028	260	662
Number of patients suffering from non-pulmonary tuber- culosis	Adult M.	60	134	119	10	65
	Adult F.	39	141	131	6	43
	Children	147	179	185	8	133
	Total	246	454	435	24	241
GRAND TOTAL		944	1,867	1,589	290	932

APPENDIX VII.

Return showing the extent of RESIDENTIAL TREATMENT provided during the year 1937 IN POOR LAW INSTITUTIONS for persons chargeable to the Council.

(Table E of Memorandum 37/T (Revised) of the Ministry of Health).

		In institu- tions on Jan. 1st.	Admitted during the year.	Discharged during the year.	Died in the institu- tions.	In institu- tions on Dec. 31st.
Number of patients suffering from pulmonary tuberculosis	Adult M.	15	91	62	34	10
	Adult F.	7	80	67	13	7
	Children	—	4	2	2	—
	Total	22	175	131	49	17
Number of patients suffering from non-pulmonary tuber- culosis	Adult M.	5	22	16	6	5
	Adult F.	6	28	21	7	6
	Children	2	30	20	7	5
	Total	13	80	57	20	16
GRAND TOTAL		35	255	188	69	33

APPENDIX VIII.

Return showing the results of OBSERVATION OF DOUBTFULLY TUBERCULOUS CASES discharged during the year 1937 from institutions approved for the treatment of tuberculosis.

(Table F of Memorandum 37/T (Revised) of the Ministry of Health).

Diagnosis on discharge from observation.	For pulmonary tuberculosis.						For non-pulmonary tuberculosis.						TOTALS.		
	Stay under 4 weeks.			Stay over 4 weeks.			Stay under 4 weeks.			Stay over 4 weeks.					
	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.
Tuberculous	7	6	—	7	3	6	5	—	8	6	4	5	25	13	19
Non-tuberculous	7	5	—	19	12	12	—	—	1	5	—	3	31	17	16
Doubtful	—	—	—	1	1	—	1	—	1	1	—	—	3	1	1
Died	*1	—	—	**1	†1	—	—	‡1	††1	—	—	§1	2	2	2
TOTALS	15	11	—	28	17	18	6	1	11	12	4	9	61	33	38

*Cause of death : Silicosis.

** Do. (a) Uraemia, (b) chronic interstitial nephritis, (c) arteriosclerosis.

† Do. (a) Cardiac failure, (b) myocarditis, (c) pulmonary abscess.

‡ Do. Addison's disease.

†† Do. Acute broncho-pneumonia.

§ Do. Spinal meningitis with paraplegia.

APPENDIX IX.

Return showing the IMMEDIATE RESULTS OF TREATMENT of definitely tuberculous patients discharged during the year 1937 from institutions approved for the treatment of tuberculosis.

(This table is based on Table G of Memorandum 37/T (Revised) of the Ministry of Health).

Classification on admission to the institution.		Condition at time of discharge.	Duration of residential treatment in the institution.															GRAND TOTALS.
			Under 28 days.			1-3 months.			3-6 months.			6-12 months.			More than 12 months.			
			M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	
PULMONARY TUBERCULOSIS.	T.B. minus.	Quiescent	—	—	—	11	9	4	14	20	4	8	7	7	3	6	6	99
		Improved	3	7	1	9	7	1	32	13	—	12	10	3	4	3	1	106
		N.M.I.	6	2	3	2	5	1	7	—	—	1	—	1	—	—	—	28
		Died	7	1	1	1	2	1	2	1	—	—	—	—	1	—	—	17
	T.B. plus 1.	Quiescent	—	1	—	—	1	—	6	1	1	6	14	—	3	6	1	40
		Improved	1	1	—	7	6	—	11	7	1	9	9	1	7	8	—	68
		N.M.I.	3	3	—	2	5	—	1	6	—	1	—	—	2	—	—	23
		Died	1	1	—	2	1	—	—	1	—	1	1	—	—	—	—	8
	T.B. plus 2.	Quiescent	—	—	—	1	2	—	4	4	—	8	6	—	7	7	—	39
		Improved	3	1	1	27	10	—	57	53	—	59	62	1	40	26	1	341
		N.M.I.	17	7	1	30	16	—	19	23	1	12	17	—	11	8	—	162
		Died	22	12	—	27	19	—	13	22	—	18	11	—	8	12	—	164
	T.B. plus 3.	Quiescent	—	—	—	—	—	—	2	—	—	—	1	—	1	1	—	5
		Improved	1	1	—	5	5	—	15	11	—	11	7	—	6	5	—	67
		N.M.I.	7	3	—	10	6	—	8	7	—	1	3	—	2	2	1	50
		Died	11	5	—	8	13	—	8	8	—	1	5	—	8	3	1	71
TOTALS (pulmonary)			82	45	7	142	107	7	199	177	7	148	153	13	103	87	11	1,288
NON-PULMONARY TUBERCULOSIS.	Bones and joints.	Quiescent	—	1	—	6	3	4	7	6	3	5	3	11	4	6	31	90
		Improved	4	6	1	5	8	4	1	2	4	3	3	7	6	3	7	64
		N.M.I.	2	5	2	3	2	2	—	1	3	1	2	1	4	1	1	30
		Died	1	—	1	—	—	1	1	—	1	1	1	—	—	1	1	9
	Abdominal.	Quiescent	—	—	1	4	4	5	2	5	4	2	—	1	1	—	—	29
		Improved	—	3	6	2	3	2	3	2	1	1	—	—	1	1	—	25
		N.M.I.	—	1	2	—	1	2	—	—	—	—	—	—	—	—	—	6
		Died	2	1	2	—	—	—	—	1	—	—	—	—	1	1	—	8
	Other organs.	Quiescent	1	—	—	—	2	1	1	1	—	—	—	1	1	—	1	9
		Improved	6	12	—	10	3	2	7	3	—	1	—	1	—	—	—	45
		N.M.I.	5	1	—	1	2	—	—	—	—	—	—	—	—	—	—	9
		Died	3	1	2	—	—	—	—	—	—	1	—	—	—	—	—	7
	Peripheral glands.	Quiescent	2	5	1	2	1	7	3	2	5	—	—	5	—	1	—	34
		Improved	4	16	31	5	6	10	1	1	6	1	—	3	1	—	—	85
		N.M.I.	—	1	2	—	2	2	—	—	2	—	—	—	—	—	—	9
		Died	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
TOTALS (non-pulmonary)			30	53	51	38	37	42	26	24	29	16	9	30	19	14	41	459

N.M.I.=No material improvement.

“ Died ” comprises deaths in the institution only.

APPENDIX X.

DEFINITIONS observed in CLASSIFYING CASES and recording results of treatment (in accordance with Memorandum 37/T (Revised) of the Ministry of Health, extracts from which are quoted below).

CLASSIFICATION OF PATIENTS SUFFERING FROM TUBERCULOSIS.

For the purpose of the Annual Returns required under this Memorandum, and of the case records necessary to enable these returns to be completed, the following system of classification of cases and of recording results should be used :—

- I.—All patients should be grouped according to their sex and age ; patients under 15 years of age should be classed as children, and those of 15 years and upwards as adults.
- II.—Patients should then be classified according to the organs or parts affected as follows :—
- (1) Pulmonary tuberculosis (including tuberculosis of the pleura or intra-thoracic glands).
 - (2) Non-pulmonary tuberculosis
- Patients suffering from both pulmonary and non-pulmonary tuberculosis should be classified as pulmonary cases.
- III.—Patients suffering from pulmonary tuberculosis should be divided into :—
- Class T.B. minus, *viz.*, cases in which tubercle bacilli have never been demonstrated in the sputum, pleural fluid, faeces, etc., and
- Class T.B. plus, *viz.*, cases in which tubercle bacilli have at any time been found. It should be noted that a patient originally in Class T.B. minus must be transferred to Class T.B. plus at any stage in the course of treatment if and when tubercle bacilli are found, while on the other hand a patient who is once placed in Class T.B. plus can never be included in Class T.B. minus. Class T.B. plus should be further sub-divided into three groups as follows :—
- Group 1.—Cases with slight constitutional disturbance, if any ; *e.g.*, there should not be marked acceleration of pulse nor elevation of temperature except of very transient duration ; gastro-intestinal disturbance or emaciation, if present, should not be excessive.
- The obvious physical signs should be of very limited extent as follows : Either present in one lobe only, and in the case of an apical lesion of one upper lobe, not extending below the second rib in front or not exceeding an equivalent area in any one lobe ; or where these physical signs are present in more than one lobe, they should be limited to the apices of the upper lobes, and should not extend below the clavicle and the spine of the scapula.
- No complication (tuberculous or other) of prognostic gravity should be present. A small area of dry pleurisy should not exclude a case from this group.
- Group 3.—Cases with profound systemic disturbance or constitutional deterioration, with marked impairment of function, either local or general, and with little or no prospect of recovery.
- All cases with grave complications (*e.g.*, diabetes, tuberculosis of intestine, etc.), whether those complications are tuberculous or not, should be classified in this group.
- Group 2.—All cases which cannot be placed in Groups 1 and 3.

APPENDIX X (contd.).

IV.—Patients suffering from non-pulmonary tuberculosis should be classified according to the site of the lesion as follows :—

- (1) Tuberculosis of bones and joints.
- (2) Abdominal tuberculosis (*i.e.*, tuberculosis of peritoneum, intestines or mesenteric glands).
- (3) Tuberculosis of other organs.
- (4) Tuberculosis of peripheral glands.

Patients suffering from multiple lesions should be classified in one sub-group only, *viz.*, in that applicable to the case which stands highest in the immediately preceding list.

RESULTS OF TREATMENT.

The following terms should be used to describe the results of treatment :—

- “ QUIESCENT.”—Cases which have no symptoms of tuberculosis and no signs of tuberculous disease, except such as are compatible with a completely healed lesion, and in which sputum, if present, is free from tubercle bacilli.
- “ ARRESTED.”—Cases in which, if pulmonary, the disease has been “ quiescent ” for a period of at least two years, or, if non-pulmonary, the disease is “ quiescent ” and there is reason to believe that it is unlikely to recur.
- “ RECOVERED.”—Cases in which arrest of the disease has been maintained for at least three years.
-

APPENDIX XI.

Number of BEDS OCCUPIED BY COUNTY PATIENTS undergoing residential treatment for pulmonary and non-pulmonary tuberculosis on the 31st December, 1937.

Institution.	Pulmonary tuberculosis.		Non-pulmonary tuberculosis.		Total.
	Adults.	Children.	Adults.	Children.	
<i>(a) Institutions for pulmonary tuberculosis.</i>					
Aitken Sanatorium, near Bury	47	—	—	—	47
Barrowmore Tuberculosis Sanatorium and Settlement, Great Barrow, Chester	43	—	1	—	44
Brompton Hospital, London	1	—	—	—	1
Chadderton Pulmonary Hospital, near Oldham	38	2	—	—	40
Eastby Sanatorium, near Skipton	—	11	—	1	12
Eccleston Hall Sanatorium, St. Helens	8	4	—	—	12
Elswick Sanatorium, near Kirkham	66	1	—	—	67
Halifax Sanatorium, Shelf	8	—	—	—	8
Heath Charnock Pulmonary Hospital, near Chorley	31	1	—	—	32
Hefferston Grange Pulmonary Hospital, Weaverham, Cheshire	1	—	—	—	1
High Carley Sanatorium, near Ulverston	107	3	—	—	110
Holy Cross Sanatorium, Haslemere, Surrey	1	—	—	—	1
King Edward VII. Sanatorium, Midhurst, Sussex	3	—	—	—	3
Lancaster Pulmonary Hospital	28	1	—	—	29
Oubas House Children's Sanatorium, Ulverston	—	10	—	2	12
Papworth Village Settlement, Papworth Hall, Cam- bridge	1	—	—	—	1
Peel Hall Pulmonary Hospital, Little Hulton	56	1	—	—	57
Pemberton Pulmonary Hospital, Wigan	4	—	—	—	4
Pendyffryn Hall Sanatorium, Ruthin, North Wales	1	—	—	—	1
Rufford Pulmonary Hospital, near Ormskirk	50	1	—	—	51
Springfield Sanatorium, Rochdale	14	—	—	—	14
Westmorland Sanatorium, Meathop, Grange-over-Sands	6	—	—	—	6
Wilkinson Sanatorium, near Bolton	11	—	—	—	11
Withnell Pulmonary Hospital, near Chorley	42	—	—	—	42
Wolstenholme Pulmonary Hospital, Norden, Rochdale	35	—	—	—	35
Total	602	35	1	3	641
<i>(b) Training colonies.</i>					
Barrowmore Tuberculosis Sanatorium and Settlement, Great Barrow, Chester	5	—	—	—	5
Burrow Hill Sanatorium Colony, Frimley, Surrey	—	—	1	—	1
Derwen Cripples' Training College, Oswestry	—	—	2	—	2
Papworth Village Settlement, Papworth Hall, Cam- bridge	2	—	—	—	2
Total	7	—	3	—	10
<i>(c) Institution with accommodation for combined tuberculosis.</i>					
Wrightington Hospital, near Wigan	17	1	—	—	18
<i>(d) Beds occupied by observation cases.</i>					
Aitken Sanatorium, near Bury	1	—	—	—	1
Barrowmore Tuberculosis Sanatorium and Settlement, Great Barrow, Chester	1	—	—	—	1
Eastby Sanatorium, near Skipton	—	1	—	—	1
Elswick Sanatorium, near Kirkham	2	—	—	—	2
High Carley Sanatorium, near Ulverston	4	—	—	—	4
Lancaster Pulmonary Hospital	1	—	—	—	1
Liverpool Royal Infirmary	—	—	1	—	1
Manchester Royal Infirmary	—	—	1	—	1
Oubas House Children's Sanatorium, Ulverston	—	8	—	—	8
Wrightington Hospital, near Wigan	—	—	4	5	9
Total	9	9	6	5	29

APPENDIX XI (contd.).

Institution.	Pulmonary tuberculosis.		Non-pulmonary tuberculosis.		Total.
	Adults.	Children.	Adults.	Children.	
(e) <i>Institutions for non-pulmonary tuberculosis.</i>					
Ashton-under-Lyne District Infirmary	—	—	—	1	1
David Lewis Northern Hospital, Liverpool	—	—	1	—	1
Liverpool Open-air Hospital, Leasowe, Cheshire	—	—	9	27	36
Manchester and Salford Hospital for Skin Diseases, Manchester	—	—	1	—	1
Manchester Royal Infirmary	—	—	1	—	1
Preston Royal Infirmary	—	—	—	1	1
Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry	—	—	2	2	4
Royal Lancaster Infirmary	—	—	1	—	1
Royal Liverpool Children's Hospital, Heswall, Cheshire	—	—	—	9	9
Wrightington Hospital, near Wigan	—	—	89	90	179
Total	—	—	104	130	234
GRAND TOTAL	635	45	114	138	932
	680		252		

N.B.—The number of beds occupied fluctuates during the course of the year, there being a greater demand for beds in the summer than in the winter. In July, 1938, the beds occupied totalled 976, and in July, 1937, 988.

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